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CORRELATIONAL AND FACTORIAL ANALYSES OF ITEMS FROM THE NINTH GRADE STUDENT QUESTIONNAIRE OF THE EDUCATIONAL OPPORTUNITIES SURVEY.

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THIS STUDY ATTEMPTED TO REDUCE THE NUMBER OF VARIABLES FROM THE EDUCATIONAL OPPORTUNITIES SURVEY QUESTIONNAIRE FOR NINTH GRADE STUDENTS IN AN EMPIRICALLY MEANINGFUL WAY IN ORDER TO REDUCE THE VOLUME OF DATA PROCESSING AND COMPLEXITY OF LATER ANALYSES. AN ACHIEVEMENT COMPOSITE WAS FORMED BY WEIGHTING AND SUMMING A STUDENT'S SCORE ON THE FOLLOWING FIVE TESTS--NONVERBAL ABILITY, VERBAL ABILITY, READING COMPREHENSION, MATHEMATICS ACHIEVEMENT, AND GENERAL INFORMATION. FIFTY-SEVEN OF THE QUESTIONNAIRE ITEMS WERE CODED TO MAXIMIZE THEIR CORRELATION WITH THE ACHIEVEMENT COMPOSITE. THESE ANALYSES WERE CONDUCTED ON THE RESPONSES AND SCORES OF 12,000 OF THE 133,136 STUDENTS WHO PARTICIPATED IN THE SURVEY. THE ANALYSES YIELDED SEVEN MEANINGFUL INDEXES--EXPECTATIONS FOR EXCELLENCE, SOCIOECONOMIC STATUS, SOCIAL CONFIDENCE, ATTITUDE TOWARD LIFE, FAMILY STRUCTURE AND STABILITY, EDUCATIONAL DESIRES AND PLANS, AND STUDY HABITS. ALL OF THEM WERE FOUND TO BE MODERATELY CORRELATED WITH ACHIEVEMENT, RACIAL-ETHNIC DIFFERENCES, AND SEX. FURTHER ANALYSIS SHOWED THAT SOCIOECONOMIC STATUS AND FAMILY STRUCTURE AND STABILITY WERE IMPORTANT VARIABLES IN PREDICTING ACHIEVEMENT AND THE ATTITUDINAL INDEXES. ALSO, SEX WAS AN IMPORTANT EXPLANATORY VARIABLE FOR STUDY HABITS, AND RACIAL-ETHNIC DIFFERENCES WAS IMPORTANT IN EXPLAINING ACHIEVEMENT AND ATTITUDE TOWARD LIFE. (DK)

NATIONAL CENTER FOR EDUCATIONAL STATISTICS
Division of Operations Analysis

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Correlational and Factorial Analyses of Items From the Ninth Grade Student Questionnaire of the Educational Opportunities Survey

INTRODUCTION*

This report presents the results of correlational and factorial analyses of items from the ninth grade student questionnaire of the Educational Opportunities Survey, (see Coleman in the List of References). The correlational analyses were conducted to: document the inter-relationships among the items and to serve as a basis for the factor analyses. The factor analyses were conducted in order to reduce the number of variables or items in an empirically meaningful way so that the volume of data processing and complexity of later analyses could be reduced. By empirically meaningful is meant that groups of variables (or factors) would be sought that correlated moderately or highly with one another and low with other groups of variables and that were psychologically or sociologically meaningful groupings.

THE MEANING OF CRITERION SCALING AND A CRITERION SCALED VARIABLE

The ninth grade questionnaire contained 107 questions relating to various aspects of the student's life including such items as his parents education, presence of a father or a father figure in the home, possessions in the home, desires for education and aspirations for further academic work, attitudes toward life, etc. In addition, the questionnaire contained the following tests: verbal ability; non-verbal ability, reading comprehension; mathematics achievement and a test of general information. Fifty-seven of the 107 questionnaire items and the five tests were included in these analyses. The other 50 questionnaire items were excluded from the analyses either because they were judged to be irrelevant to the present analyses or they were considered to be best kept as separate variables for special studies. Therefore, such items as which of the fifty states an individual or his mother was born in, what particular courses he is enrolled in school, or the length of time it takes the student to get to school were not considered to be relevant to the present analyses even though they may be potentially important variables for other kinds of analyses. Similarly, many of the variables

*The authors are indebted to Mr. Walter Davis (formerly) of the Division of Data Processing and Analysis for his assistance with the computer analyses.

concerned with preference for different racial groups and extent of school and classroom integration were judged to be best kept as separate variables for special studies.

Earlier analyses (see Weinfeld, et. al, TN No. 31 in the List of References) of the ninth grade student questionnaire computed the average achievement score obtained by individuals choosing each question (or item) response alternative. The achievement score was a composite measure obtained by weighting each student's standardized test scores (standardized to a mean of zero and a standard deviation of one) by the following weights:

Non-Verbal	.76
Verbal	.92
Reading Comprehension	.87
Mathematics Achievement	.85
General Information	.81

These weights were obtained from an earlier analysis of the intercorrelations among the five tests (see Mayeske and Weinfeld, TN No. 21 in the List of References). This earlier analysis showed that the tests were sufficiently highly intercorrelated to enable them to be combined into a single composite measure. The weights used to accomplish this were obtained from the first principal component or axis of the test intercorrelations (see Horst in the List of References for a detailed description of this procedure).

An example of a questionnaire item which has been analyzed against this achievement composite is given in Table 1.

TABLE 1.-Average Achievement Scores for Response to Number of Persons in the Home

Question: How many people live in your home?

Response	Alternative	Percent of Students Claiming That Alternative	Average Achievement Score of Students Choosing that Alternative
(A)	2	1.9	48.055
(B)	3	9.5	51.253
(C)	4	20.9	52.399
(D)	5	21.7	51.783
(E)	6	16.7	50.543
(F)	7	10.4	48.763
(G)	8	6.6	47.423
(H)	9	4.0	45.542
(I)	10	2.5	44.330
(J)	11 or more	4.2	43.223
NR	(Skipped question or failed to respond)	1.5	39.864
TOTAL		100.0	50.000

The analysis presented in Table 1 is sometimes called a criterion scale analysis, (see Weinfeld et al, TN 31 in the List of References for technical exposition of criterion scaling). In this case the achievement composite (standardized to a mean of 50 and a standard deviation of 10) is the criterion and the analysis shows how the persons choosing the different response alternatives score on the composite. When an item (or variable) is coded by assigning each response alternative its respective criterion mean, the item is said to be criterion scaled. This manner of coding an item guarantees that it will be maximally correlated to the criterion or variable to be predicted. The criterion scaling may alter the meaning of a variable. Thus, as in Table 1, a criterion scaling of Number of Persons in the Home results in a variable which is better labeled "Number of Persons in the Home Optimally Related to Achievement". The optimum in this case occurs at about four persons with the achievement values descending for more or fewer persons in the home.

LIST OF VARIABLES AND MANNER OF CODING

The following is a list of variables used in the analyses and their interpretation according to the codes assigned. In most cases the codes were obtained from the criterion scale analyses, (see Weinfeld, et. al., TN No. 31 in the List of References for these analyses and the questions) and are given in Appendix A.

VARIABLE NUMBER	TITLE	MANNER OF CODING
1	Sex	Scored high for female, low for male.
2	Age	Scored high for age 14 and 13, lower for younger or older ages.
3	Area in Which the Student Has Spent Most of His Life	Scored high for residence in another state, low for local and out of country.
4	Type of Community in Which Student Has Spent Most of His Life	Scored high for large city suburbs and medium size cities, low for rural and inner cities.
5	Racial-Ethnic Differences	Scored high for whites and Oriental-Americans, low for Negroes, Puerto-Ricans, Mexican-Americans and Indian Americans.
6	Number of Persons Living in Home	Scored high for 4 and 5 persons, lower for more or fewer persons.
7	Number of Siblings	Scored high for 1 or 2, lower for more or fewer siblings.
8	Number of Older Siblings	Scored highest for none and lower for increasingly larger numbers of older siblings.
9	Number of Siblings Dropped out of High School	Scored high for no older siblings or no dropouts and lower for increasingly larger numbers of dropouts.

(Continued)--

VARIABLE NUMBER	TITLE	MANNER OF CODING
10	Parents Speak a Foreign Language in the Home	Scored high for English spoken most of the time.
11	Student Speaks a Foreign Language Outside of School	Scored high for rarely, intermediate for occasionally or not at all, and low for frequently.
12	Number of Rooms in the Home	Scored highest for 6 to 10 rooms, lower for fewer rooms.
13	Who Acts as Father	Scored high for father living at home, lower for some other person serving as father.
14	Who Acts as Mother	Scored high for mother living at home, lower for some other person serving as mother.
15	Father's Occupational Level	Scored high for professional, sales, managerial and technical occupations, low for farm worker laborer.
16	Father's Educational Level	Scored higher for increasingly more years of education.
17	Mother's Educational Level	Score higher for increasingly more years of education
18	Family's Source of Income	Scored high for father's work major source, low for mother or other relative.
19	Mother's Work	Scored high if mother doesn't work, low if she is employed full-time.
20	Mother's Desire for Child's Academic Excellence	Scored high for one of best students in class or above average, low for just good enough to get by.
21	Father's Desire for Child's Academic Excellence	Same as variable 20.

VARIABLE NUMBER	TITLE	MANNER OF CODING
22	School Discussions With Parents	Scored high if discussions are held daily or weekly, low if discussions aren't held at all.
23	Father's Desire for Child's Educational Level	Scored high if father wants child to have four or more years of college, low for finishing high school or less.
24	Mother's Desire for Child's Educational Level	Same as variable 23.
25	Frequency of Parents PTA Attendance	Scored high for frequent attendance at meetings and lower for less frequent attendance. Also scored high if the school does not have PTA.
26	Pre-School Reading	Scored high if the student was read to frequently before he started school, low for not at all or infrequently.
27	Appliances in the Home	Scored high for possession of a TV set, telephone, hi fi, or stereo, refrigerator, automobile, vacuum cleaner, etc., low for non-possession.
28	Reading Materials in the Home	Scored high for subscription to a daily newspaper, magazines, possession of an encyclopedia, number of books in the home, etc. low for non-possession.
29	Kindergarten Attendance	Scored high for attendance, low for non-attendance.
30	Frequency of Changes in School	Scored high for few or no changes, low for two or more.

VARIABLE NUMBER	TITLE	MANNER OF CODING
31	Recency of Change in School	Scored high for no change or a change of three or more years ago, low for a more recent change.
32	Desire for Higher Education	Scored high if student desires to go to college or postgraduate work, lower for less education desired.
33	College Plans	Scored high for definite college plans, low for non-college plans.
34	Number of Books Read During Summer	Scored high for many books, low for few or none.
35	Hours Watching TV	Scored high for 1 to 3 hours of TV viewed per day, lower for more or less.
36	Attitude Towards School	Scored high if student would do most anything to continue in school, low if he'd like to quit.
37	Students Own Desire to Excel	Scored high if student wants to be one of best in class or above middle, low for lower aspirations.
38	Study Time	Scored high if student spends one to three hours per day studying outside of school, lower for fewer or more hours.
39	Voluntary Absences	Scored high if student has not stayed away from school just because he wanted to, lower as number of days absent increases.
40	Extra-Curricular Activities	Scored high for participation in many extracurricular activities such as future teachers,

(Continued)--

VARIABLE NUMBER	TITLE	MANNER OF CODING
		athletic team, student council, debate, etc., low for non-participation.
41	Outside Work	Scored high if the student worked 20 hours a week or less, low if more than 20 hours/week.
42	Social Rating	Scored high if the student feels he has a high social rating, low if he thinks he has a lower social rating.
43	Brightness	Scored high if the student feels that he is one of the brightest in his grade, lower if he feels he is one of the less bright.
44	Teacher's Expectations	Scored high if the student feels that his teacher expects him to be above average, low if he feels that his teacher expects him to be below average.
45	Life Condition	Scored high if the student disagrees that people who accept life are happier than those who try to change, intermediate if they aren't sure.
46	Work Success	Scored high if student disagrees that good luck is more important than hard work for success, lower if he agrees.
47	Getting Ahead	Scored high if student disagrees that everytime he tries to get ahead something or someone stops him, lower if he agrees.
48	Success in Life	Scored high if student disagrees that if a person is not successful in life it is his own fault, lower for agree.

(Continued)--

VARIABLE NUMBER	TITLE	MANNER OF CODING
49	Education in Job	Scored high if student disagrees with statement that he'll have a hard time getting the right kind of job even with a good education, lower for agree.
50	Sacrifice	Scored high if student would not make any sacrifice to get ahead, scored low if he would.
51	Want to Change	Scored high if student would not want to be someone else, low if he would.
52	Learning Problem	Scored high if the student feels that he can learn all right, low if he doesn't feel that.
53	Teaching Rate	Scored high if student disagrees that he would learn better if the teachers didn't go so fast, low if he agrees with it.
54	Tough Job	Scored high if student agrees that the tougher the job the harder he works.
55	Ability to Do Well	Scored high if the student says he is able to do many things well, lower if not.
56	Successful Life	Scored high if student disagrees that people like him don't have a chance to be successful in life, lower if agree.
57	Occupational Level Preferred	Scored high for professional and technical aspirants, low for farm workers.
58	Non-Verbal Test Score	Total Correct
59	General Information, Total	Total Correct

VARIABLE NUMBER	TITLE	MANNER OF CODING
60	Verbal Ability	Total Correct
61	Reading Comprehension	Total Correct
62	Mathematics Achievement	Total Correct

These sixty-two variables were intercorrelated using a computer program that allows for an unequal number of observations on each variable. Unequal observations were usually caused by a student giving two responses to a question either erroneously or because he did not adequately erase one of the answers. There were approximately 133,136 ninth grade students included in this study. In order to reduce the computer processing time, the analyses were conducted on a random sample of 12,000 of the ninth grade students. Of these 12,000 students usually no more than 400 were missing a value on any one variable. One extreme case however had 1,600 missing observations (variable 57). The means, standard deviations and intercorrelations are given in Appendix B. The results of correlations between selected variables will not be given at this point since they can be more simply and readily discussed in connection with the index correlations which will be given in a later section.

FACTOR ANALYSES - PROCEDURES AND RESULTS

Procedures

As stated earlier the purpose of the factor analyses was to reduce the number of variables in an empirically meaningful way. In order to accomplish these analyses the Principal Components method was used to extract the factors. In the terminology of matrix theory a principal component is similar to an eigenvector, latent vector or characteristic vector, and the amount of variance accounted for by a factor is similar to an eigenvalue, latent root or characteristic root. The principal components method takes out the roots and associated vectors in descending order of magnitude. In other words it maximizes the amount of variance taken out with each successive factor (see Horst in the List of References, especially page 156). The principal components with a root of one or greater were then subjected to a Varimax rotation (see Horst, pages 418 and Kaiser in the List of References). Varimax is a technique for rotating factors so that the variables have high or low weights for each factor. Those variables that are high on a factor might be considered as belonging together and some descriptive or

interpretive label might be applied to them on the basis of what they appear to have in common.

The variables of sex (1), age (2) and racial-ethnic differences (5), were not entered into the initial analyses because it was desired to retain them as separate variables for later special studies. The individual tests were not included since the composite achievement score was to be used in later analyses as a dependent variable.

A number of subsets of the remaining 54 variables in addition to the full set, were each subjected to a Principal Components Analysis and a Varimax rotation. These a priori groupings were used to test the investigators preconceptions as to the kinds of variables that might form meaningful groupings. These a priori groupings were usually of a greater complexity than had been anticipated and consequently each separate group did not usually form a single factor (viz., they usually had more than one Principal Component with a root of one or greater). The full set of 54 variables did form some meaningful factors; however, a number of variables were complicating the solution and hence blurring the meaning of some of the factors. In addition some variables were forming small variance factors with only one or two variables having a substantial weight on them. Several variables concerned with the size of the family such as Number of Persons in the Home (6), Number of Older Siblings (8), Number of Siblings Dropped Out of School (9), and Number of Siblings (7) were forming on unwanted factor and consequently all but the latter variable were dropped. In a similar manner, Appliances in the Home (27) and Reading Materials in the Home (28) were so highly correlated that they kept forming an unwanted doublet factor. Consequently, Appliances in the Home (27) was dropped from the second set of factor analyses but was brought back into the indices by being given the same weight as Reading Materials in the Home (28). Foreign Language Spoken by the Parents (10) and also by the Student (11) tended also to form a doublet factor and consequently one of these variables (11) was eliminated from the factor analyses.

The remaining variables which were eliminated were whether or not the student attended kindergarten (29) and how frequently the student had changed schools (30). Variable 30 tended to form an unwanted doublet with recency of change in schools (31) and was therefore dropped. Variable 29 was dropped from the factor analyses but was retained for special studies because it needs to be considered in conjunction with school variables such as whether or not the school has a kindergarten.

The remaining 47 variables were subjected to a Principal Components analysis. Table 2 gives the Amount of Variance for each Principal Component and the Cumulative Percent. The percent of variance of a factor is computed utilizing a theorem from matrix theory which states

TABLE 2. - Amount and Cumulative Percent of Variance Accounted for by Each Principal Component

INDEX	ROOT	PER CENT
1	7.6941	16.37
2	2.3478	21.37
3	2.0107	25.64
4	1.7443	29.36
5	1.4840	32.51
6	1.3613	35.41
7	1.2915	38.16
8	1.2160	40.74
9	1.0476	42.97
10	1.0236	45.15
11	0.9946	47.27
12	0.9838	49.36
13	0.9711	51.43
14	0.9596	53.47
15	0.9386	55.47
16	0.8964	57.37
17	0.8771	59.24
18	0.8611	61.07
19	0.8479	62.88
20	0.8367	64.66
21	0.8154	66.39
22	0.8016	68.10
23	0.7983	69.79
24	0.7786	71.45
25	0.7605	73.07
26	0.7562	74.68
27	0.7528	76.28
28	0.7226	77.82
29	0.7188	79.35
30	0.7096	80.86
31	0.7047	82.36
32	0.7039	83.85
33	0.6870	85.32
34	0.6672	86.73
35	0.6556	88.13
36	0.6542	89.52
37	0.6286	90.86
38	0.6062	92.15
39	0.5953	93.42
40	0.5839	94.66
41	0.5114	95.75
42	0.4666	96.74
43	0.4091	97.61
44	0.3966	98.45
45	0.2976	99.09
46	0.2718	99.66
47	0.1578	100.00

that the trace of a matrix (i.e. the sum of its diagonal elements) is equal to the sum of its roots, (i.e. the total variance of the matrix). Since there are one's in the diagonal of a correlation matrix, the trace is equal to the number of variables. Consequently, dividing the amount of variance for each factor by the number of variables, one obtains the proportion of total variance attributable to a given factor or Principal Component.

The first 10 components, which had roots of one or greater, were subjected to a Varimax rotation (these rotated factors are given in Appendix C). Seven of these 10 factors were meaningfully interpreted. The other three were small variance factors which were deleted because the few variables on them could best be retained as separate variables or because variables related to these factors related to other factors and more meaningfully belonged on these other factors. Hence, PTA Attendance (25), Extra Curricula Activities (40), and Foreign Language Spoken by the Parents (10) were retained as separate variables.

RESULTS

The following Tables contain those factors which were found to be meaningful. The interpreted factors will be referred to as indices. All variables other than those listed in the Tables are considered to have zero weights for a particular index. A variable can belong to one and only one index. This rule tends to keep the intercorrelations of the index scores low since a variable would tend to increase the correlation between two indices if it contributed positively to both of them.

TABLE 3.- Index I: Expectations for Excellence

VARIABLE NUMBER	TITLE	WEIGHT
20	Mother's Desire for Child's Academic Excellence	.83
21	Father's Desire for Child's Academic Excellence	.81
37	Student's Own Desire to Excel	.64
44	Teacher's Expectations for Student to Excel	.50

This index involves the student's views of the expectations that he, his parents and his teacher hold for his own academic performance. Consequently it has been labeled Expectations for Excellence. A student with a high score on this index feels that both his mother and his father want him to be one of the best students in his class. The student feels that he would also like to be one of the best students in his class and that his teacher shares this view.

TABLE 4.- Index II: Socio-Economic Status

VARIABLE NUMBER	TITLE	WEIGHT
4	Type of Community in Which Student Has Spent Most of His Life	.53
7	Number of Siblings	.53
12	Number of Rooms in the Home	.22*
15	Father's Occupational Level	.57
16	Father's Educational Level	.66
17	Mother's Educational Level	.64
27	Appliances in the Home	.28**
28	Reading Materials in the Home	.29

*The single asterisk indicates that the variable came out higher on another index but was considered to more meaningfully belong to this index.

**The double asterisk indicates that the variable was not included in the factor analysis because it was so highly correlated with reading materials in the home (28) but was rather given almost the same weight as variable 28 when computing the index.

This index contains most of the variables (with the exception of income level) which are considered to be indicators of Socio-Economic Status and consequently that name has been given to this index. A student with a high score on this index tends to come from a suburb of a large city or from a medium size city, has one or two siblings, lives in a six to ten room house, his father is engaged in a professional, sales, managerial, or technical job, both his mother and his father come from the higher educational strata and there are a large number of appliances and reading materials in his home.

TABLE 5.- Index III: Social Confidence

VARIABLE NUMBER	TITLE	WEIGHT
41	Outside Work	.57
42	Social Rating	.31
48	Success in Life	.45
54	Tough Job	.56
55	Ability to Do Many Things Well	.51

A student who has a high score on this index works less than 20 hours a week if at all on an outside job, feels that he has a high social rating in the school, feels that lack of success in life is not necessarily an individual's own fault, says that the tougher the job is the harder he works and, feels that he can do many things well. Since, in some respects a high scoring student might subscribe to the philosophy that life is a breeze, in that he can do many things without too much effort and other things well with some effort, this index has been labeled Social Confidence.

TABLE 6.- Index IV: Attitude Toward Life

VARIABLE NUMBER	TITLE	WEIGHT
45	Life Condition	.25*
46	Work for Success	.41
47	Difficulty Getting Ahead	.62
49	Education in Job	.49
50	Sacrifice to Get Ahead	.20*
51	Want to Change	.53
52	Learning Problems	.56
53	Teaching Rate	.57
56	Successful Life	.60

*The asterisks indicate that these variables had higher weights on other indices but more meaningfully belonged on this index even with a low weight.

A student with a high score on this index feels that: people who accept their condition in life are not necessarily happier, hard work is more important than good luck for success, when he tries to get ahead he doesn't encounter obstacles, with a good education he won't have difficulty getting a job, he would not sacrifice everything to get ahead, he would not want to change himself, he doesn't feel that he has difficulty learning, doesn't feel he would do better if his teachers went slower and does feel that people like him have a chance to be successful. Since most of these items pertain to the students Attitude Toward Life, this title has been given to this index.

TABLE 7.- Index V: Family Structure and Stability

VARIABLE NUMBER	TITLE	WEIGHT
3	Area in Which Student Has Spent Most of His Life	.10*
13	Who Acts as Your Father	.84
14	Who Acts as Your Mother	.60
18	Family's Source of Income	.73
19	Mother's Work	.20*
31	Recency of Change in School	.20*

*The asterisks indicate that these variables had higher weights on other indices but more meaningfully belonged on this index even with a low weight.

Many of these items relate to the structure of the students family. A high scoring student has his regular father and mother fulfilling their roles (as opposed to some substitute figure), his father's salary is the major source of family income and his mother does not work or works only part-time. The high scoring student has not changed schools or if he has this change has not been within the last three years (31) and if he has experienced family mobility it has tended to be across state lines (3). In view of these results this index has been titled Family Structure and Stability.

TABLE 8.- Index VI: Educational Desires and Plans

VARIABLE NUMBER	TITLE	WEIGHT
23	Father's Desire for Child's Educational Level	.81
24	Mother's Desire for Child's Educational Level	.82
32	Student's Desire for Higher Education	.80
33	Student's Plans for College	.74
43	Brightness	.29
57	Occupational Level Preferred	.46

A student with a high score on this index says that both his mother and father want him to go to college and that he, in turn, both desires and plans to go to college. He feels that he is one of the brightest students in his grade and aspires to a high occupational level such as professional and technical jobs. This index has been named Educational Desires and Plans.

TABLE 9.- Index VII: Study Habits

VARIABLE NUMBER	TITLE	WEIGHT
22	School Discussions With Parents	.34
26	Pre-School Reading	.33
34	Number of Books Read During Summer	.48
35	Number of Hours Watching TV	.49
36	Attitude Towards School	.47
38	Study Time	.62
39	Voluntary Absences	.34*

*The asterisk indicates that this variable had a higher weight on another index but that it was more meaningful on this index.

A student with a high score on this index: has daily or weekly discussions with his parents about his school work, was read to frequently before he started school, read many books during the summer, watches TV one to three hours per day, would do most anything to continue in school, spends one to three hours per day studying outside school and has seldom stayed away from school just because he wanted to. This index has been labeled Study Habits.

INDEX SCORE INTERCORRELATIONS

A score on each index was computed for each ninth grade student. The variables that were used to form each index were first standardized to a mean of zero and a standard deviation of one (using the means and standard deviations in Appendix B to subtract and divide by, respectively). These index scores were then intercorrelated for the approximately 130,000 ninth grade students. These intercorrelations are given in Table 10 (and also in Appendix D).

TABLE 10.- Index Score Intercorrelations

		I	II	III	IV	V	VI	VII
I	Expectations	1.00	.40	.45	.47	.37	.54	.54
II	Socio-Economic Status	.40	1.00	.31	.38	.47	.54	.45
III	Social Confidence	.45	.31	1.00	.85	.33	.36	.52
IV	Attitude Toward Life	.47	.38	.85	1.00	.33	.45	.50
V	Family Structure and Stability	.37	.47	.33	.33	1.00	.33	.48
VI	Educational Desires and Plans	.54	.54	.36	.45	.33	1.00	.50
VII	Study Habits	.54	.45	.52	.50	.48	.50	1.00

Inspection of Table 10 shows that all of the indices are moderately correlated with one another (with the exception of the two attitudinal indices, Social Confidence and Attitude Toward Life). These correlations are somewhat higher than is usually experienced using factor analytic techniques. The reader should bear in mind however, that the variables have been scaled so as to be maximally related to the Achievement Composite. When the individual variables are weighted and summed these sums are more highly correlated with the Achievement Composite than are the individual variables since what they have in common tends also to be common with the Achievement Composite (unless one rigidly adheres to all the orthogonal Varimax weights which is usually at the sacrifice of a great deal of meaningfulness).

It is convenient to summarize the index score intercorrelations by subjecting them to a Principal Components analysis and Varimax rotation. Table 11 gives the amount and cumulative percent of variance accounted for by the Principal Components. (These terms are the same as those defined for Table 2).

TABLE 11.- Amount and Cumulative Percent of Variance Accounted for by Each Principal Component

Principal Component	Root	Percent
1	3.7548	.54
2	.9986	.68

Although components beyond the first two were not extracted, Table 11 shows that 68 percent of the variance is accounted for by the first two Principal Components. The results of a Varimax rotation of these factors is given in Table 12.

TABLE 12.- Varimax Rotation of First Two Principal Components From the Index Score Intercorrelations

	Index Title	Varimax* Factor Weights 1	Varimax Factor Weights 2
I	Expectations	.62	.79
II	Socio-Economic Status	.14	.99
III	Social Confidence	.98	.19
IV	Attitude Toward Life	.96	.27
V	Family Structure and Stability	.19	.98
VI	Educational Desires and Plans	.39	.92
VII	Study Habits	.60	.80

*These are the Varimax rotations of the first and second Principal Components.

The first factor in Table 12 is an attitudinal constellation while the second factor involves the Socio-Economic-Family Structure constellation particularly as it involves desires and plans for higher education and the development of expectations and practices in support of these desires and plans. The weights give the relative contribution of each index to the attitudinal constellation (factor 1) and the socio-economic family structure constellation (factor 2).

CORRELATIONS OF INDICES WITH SELECTED OTHER VARIABLES

We can also learn more about the nature of these indices by seeing to what extent they correlate with other variables left out of the analyses. Some of these selected correlations are given in Table 13 (and also in Appendix D).

The reader will note that the Achievement Composite is listed as both a variable and an index in Table 13, in order to show the relationship of the other variables to the Achievement Composite.

Some of the indices, such as Socio-Economic Status (II) and Family Structure and Stability (V), can be regarded as influences that effect the student but are not directly effected by the school. The remaining indices however, can be influenced by both the school and the home background. It may be well to keep these variables separate, at least conceptually, in interpreting these analyses. It is particularly interesting to note that Socio-Economic Status(II) is the highest correlate of the Achievement Composite while Educational Desires and Plans (VI) and Attitude Toward Life (IV) are close seconds. These

TABLE 13.- Index Correlations With Selected Variables Eliminated from the Analyses

VARIABLE NUMBER*	TITLE	Index Number and Title I EXPCTNS	II SES	III SOC. CONFIDENCE	IV ATT. TO LIFE	V FAM. STRCTR. & STABILITY	VI ED. DESIRES & PLANS	VII STUDY HABITS	VIII ACH.
8	Achievement Composite	.39	.54	.30	.47	.33	.51	.36	—
9	Sex	.20	.26	.24	.21	.34	.16	.36	.13
11	Racial-Ethnic Differences	.17	.41	.25	.30	.35	.16	.24	.47
15	Foreign Language Spoken by Parents	.22	.26	.20	.20	.33	.17	.31	.18
16	Foreign Language Spoken by Student	.22	.29	.21	.21	.31	.21	.33	.18
17	Frequency of Parents PTA Attendance	.31	.33	.27	.26	.34	.31	.44	.18
18	Attended Kindergarten	.25	.40	.28	.26	.33	.30	.41	.24
19	Infrequent Change in School	.32	.29	.37	.32	.45	.27	.53	.18

*These are the variable numbers as they appear in Appendix D.

correlations suggest that some systematic regression analyses might yield some high multiple correlations of these indices with the Achievement Composite. Some of these regression analyses are conducted in the next section.

It is surprising to see that sex (9) is more highly correlated with the indices than with the Achievement Composite. Evidently girls enjoy a better family background than boys and have a more favorable outlook on life, better study habits and higher expectations and plans than do boys.

The variable of Racial-Ethnic differences (11) is moderately correlated with Achievement (VIII), Socio-Economic Status (VI), Family Structure and Stability (V) and slightly less correlated with the remaining indices. The pattern of correlations of this variable with the others suggests that this is an important variable to look at in a regression analysis with other variables.

Both Foreign Language Spoken by the Parents (15) and Foreign Language Spoken by the Student (16) show similar correlations with the other indices. Apparently the same kinds of conditions are involved in the use of a Foreign Language, whether it is spoken by the parents or by the student.

The frequency with which a student's parents attend PTA is moderately related to all of the indices but most highly to the home background - academic orientation constellation which was characterized by the second factor in Table 12.

It is interesting to note that whether or not a child attended kindergarten (18) is most highly related to the family's Socio-Economic Status (II) and Study Habits (VII). Although both may represent in part the influence of the family, attendance at kindergarten comes earlier in the child's life and may contribute to the development of study habits.

Infrequent Changes in School (19) shows a moderate relationship with Study Habits (VII) and Family Structure and Stability (V). Probably Family Stability is indicated in part by the student's seldom changing schools and Family Stability also plays a role in the development of Study Habits (VII).

This section has shown that the number of variables can be reduced in a meaningful way to a smaller number of indices. Although the intercorrelations are moderately high they can be interpreted meaningfully both with one another and with other variables such as

Racial-Ethnic Difference and Achievement. The next section presents systematic regressions of Achievement against some of these variables.

REGRESSIONS OF ACHIEVEMENT AND ATTITUDINAL INDICES ON HOME BACKGROUND, SEX, AND RACE

Several of the indices such as Expectations (I), Attitude Toward Life (IV), Educational Desires and Plans (VI), Study Habits (VII) and Achievement (VIII) can be viewed as being influenced by both the family and the school. Still other indices such as Socio-Economic Status (II) and Family Structure and Stability (V) influence the ch ld but are not directly influenced by the school. It may be best therefore to keep this former set as dependent variables and see what other indices and variables are useful in estimating them using multiple regression techniques. It is particularly instructive to see how family background (Socio-Economic Status (II) and Family Structure and Stability (V))combine with Sex (9) and Racial-Ethnic differences (11) to predict the Achievement (VIII) and Attitudinal indices (I, IV, VI and VII). The following tables give the squared multiple correlations for different combinations of these variables.

TABLE 14.-Squared Multiple Correlations for the Regression of Achievement and Attitude Indices on Home Background*

INDEX NUMBER	TITLE	SES (1)	SES AND FSS (2)	DIFFERENCE (2) - (1)
I	Expectations	.1572	.1990	.0418
II	Attitude Toward Life**	.1474	.1777	.0303
VI	Educational Desires and Plans	.2859	.2935	.0076
VII	Study Habits	.2021	.2977	.0956
VIII	Achievement	.2886	.2964	.0078

*The abbreviation for Socio-Economic Status is SES, and for Family Structure and Stability, FSS; the two together are called Home Background.

**Social Confidence (III) was eliminated because it was so highly correlated with this index.

Inspection of the columns in Table 14 shows that SES makes a subtantial contribution to all of the dependent variables but most particularly to Achievement, Educational Desires and Plans and Study Habits. Column 2 shows the contribution of FSS in combination with SES. The column labeled DIFFERENCE is obtained by subtracting the values in column 1 from the values in column 2. This difference which is a unique proportion of variation is interpreted to be the unique contribution of FSS to the prediction of these dependent variables after SES has been taken into account. Clearly, FSS makes a substantial contribution, in addition to SES, to Study Habits, Expectations and Attitude Towards Life.

It is quite reasonable that both SES and FSS would be related to all of these dependent variables. Parents of different socio-economic levels hold different values toward education and achievement and socialize their children differently in light of these values. Children of parents from higher socio-economic strata enjoy more physical comforts and experience fewer barriers in achieving SES levels comparable to their parents than does a child of lower SES who wants to achieve an SES level higher than that of his parents. Also a child from a stable family structure may experience a more secure psychological environment. All of these factors may contribute to the development of a future oriented, achieving child who has a very favorable outlook on life and consequently has a high score on each of these various dependent variables.

Table 15 presents the squared multiple correlations for Home Background in combination with Racial-Ethnic and Sex differences.

TABLE 15.- Squared Multiple Correlations for the Regression of Achievement and Attitude Indices on Home Background, Racial-Ethnic Differences and Sex

INDEX NUMBER	TITLE	HB* (1)	HB & RACE (2)	HB, RACE & SEX (3)	HB & SEX (4)	(2)-(1)	(4)-(1)	(3)-(2)	(3)-(4)
I	Expectations	.1990	.2000	.2029	.2019	.0010	.0029	.0029	.0010
IV	Att. To Life	.1777	.1938	.1998	.1836	.0161	.0059	.0060	.0162
VI	Ed. Desires & Plans	.2935	.3000	.3000	.2935	.0065	.0000	.0000	.0065
VII	Study Habits	.2977	.2977	.3282	.3282	.0000	.0305	.0305	.0000
VIII	Achievement	.2964	.3645	.3655	.2975	.0681	.0011	.0010	.0680

*The abbreviation for Home Background is HB. HB is comprised of SES and FSS.

Table 15 contains the squared multiple correlations and their differences for various combinations of Home Background, Race, and Sex.

The first question that one can ask in perusing this table is: What is the contribution of Racial and Ethnic differences after equating students for differences in their Home Background? This is answered by observing the first 2 columns and their difference in the DIFFERENCES columns. These columns show that Racial and Ethnic differences make a substantial contribution to Achievement and a slight contribution to the other dependent variables.

Another question one can ask in looking at Table 15 is: Is Sex related to these indices after equating students for differences in Home Background? This question is answered by looking at columns 1 and 4 and their difference in the unique variance columns. This shows that Sex appears to make a contribution only to Study Habits. A related question immediately arises however as to whether or not Sex is needed as an explanatory variable after equating students for differences in Home Background and Race. This question is answered by observing the values in columns 2, 3 and 4 and their differences in the last two DIFFERENCES columns. Comparison of these latter two columns shows that Sex continues to make a contribution to Study Habits (see column (3) - (2), after equating students for differences in Home Background and Race. The column labeled (3) - (4) shows that Racial and Ethnic differences continue to make a contribution to Achievement and Attitude Towards Towards Life after equating students for differences in Home Background and Sex. Hence, Sex may be needed as a variable only in predicting Study Habits whereas Racial-Ethnic Differences are important in analyzing Achievement and Attitude Towards Life.

A more thorough set of regression analyses using more variables and a technique for partitioning the variance attributable to either one of a set of variables will be presented in a later note.

CONCLUSIONS

This study attempted to reduce the number of variables from the Educational Opportunities Survey Questionnaire for Ninth Grade Students in an empirically meaningful way so that the volume of data processing and complexity of later analyses could be reduced.

An Achievement Composite was formed by weighting and summing the student's scores on the following five tests: Non-Verbal Ability, Verbal Ability, Reading Comprehension, Mathematics Achievement and General Information. Fifty-seven of the questionnaire items were coded so as to maximize their correlation with this Achievement Composite. These same items were then intercorrelated and subjected to a series of Principal Components factor analyses and Varimax rotations.

Seven meaningful indices were developed from these factor analyses. The indices were labeled as follows:

I Expectations for Excellence

II Socio-Economic Status

III Social Confidence

IV Attitude Toward Life

V Family Structure and Stability

VI Educational Desires and Plans

VII Study Habits

Index intercorrelations were computed and were found to be moderate in value. Correlations of the indices with other variables were also computed. Some of the more salient findings are that all of the indices are moderately correlated with Achievement, Racial-Ethnic Differences and Sex.

Multiple regression analysis using Socio-Economic Status and Family Structure and Stability as the independent variables and selected other indices as the dependent variables yielded the following multiple correlations:

	Dependent Variable	Multiple Correlation
I	Expectations for Excellence	.44
IV	Attitude Towards Life	.42
VI	Educational Desires and Plans	.53
VII	Study Habits	.54
VIII	Achievement	.54

These correlations show that Socio-Economic Status and Family Structure and Stability are potent variables in predicting Achievement and the other Attitudinal indices. Other analyses showed that after equating students for differences in Socio-Economic Status and Family Structure, Sex was an important explanatory variable for Study Habits, and Racial-Ethnic Differences was important in explaining Achievement and Attitude Toward Life.

Similar analyses will be forthcoming for principals.

LIST OF REFERENCES CITED

COLEMAN, J. L., et al., Equality of Educational Opportunity. National Center for Educational Statistics, U.S. Government Printing Office, Washington: 1966, Catalog No. FS5.38001 and Supplement.

HORST, Paul, Factor Analysis of Data Matrices. HOLT, RHINEHART and WINSTON, Inc.: 1965.

KAISER, Henry F., "The Varimax Criterion for Analytic Rotation in Factor Analysis." Psychometrika, 23, 187-200 (1958).

MAYESKE, G. W., WEINFELD, F. D., Factor Analyses of Achievement Measures From The Educational Opportunities Survey. Technical Note Number 21, Division of Operations Analysis, National Center for Educational Statistics, U.S. Office of Education, January 1967.

WEINFELD, F. D., MAYESKE, G. W., and BEATON, A. E., Jr., Item Response Analyses of the Ninth Grade Student Questionnaire From The Educational Opportunities Survey. Technical Note Number 31, Division of Operations Analysis, National Center for Educational Statistics, U.S. Office of Education, October, 1967.

APPENDIX A

Coding of Items from the Ninth Grade Student Questionnaire

VARIABLE NUMBER	ITEM* NUMBER	ITEM ALTERNATIVE	CODE
1	1	OMIT	
	2	OMIT	
	3	A	49.760
		B	50,527
		NR	38,511
2	4	A	46.108
		B	50.731
		C	52.185
		D	44.064
		E	41.246
		F	39.318
		G	41.331
		NR	38.732
3	5	A	50.183
		B	50.070
		C	51.121
		D	40.415
		E	39.596
		F	43.586
		G	48.121
		NR	41.305

*The item numbers refer to the items as they are numbered in the questionnaire.

APPENDIX A (continued)

VARIABLE NUMBER	ITEM NUMBER	ITEM ALTERNATIVE	CODE
4	6	A	47.573
		B	50.135
		C	51.633
		D	51.422
		E	49.565
		F	54.101
		G	49.108
		H	52.640
		NR	40.879
5	7	A	41.609
		B	52.788
		C	44.839
		D	51.024
		E	45.707
	8	A	40.643
		B	43.599
		C	.....
		NR	39.976
6	9	A	48.055
		B	51.253

APPENDIX A (continued)

VARIABLE NUMBER	ITEM NUMBER	ITEM ALTERNATIVE	CODE
		C	52.399
		D	51.783
		E	50.543
		F	48.763
		G	47.423
		H	45.542
		I	44.330
		J	43.223
		NR	39.064
7	10	A	50.337
		B	53.361
		C	52.604
		D	51.431
		E	49.723
		F	48.182
		G	46.628
		H	45.497
		I	44.155
		J	43.400
		NR	39.633

APPENDIX A (continued)

VARIABLE NUMBER	ITEM NUMBER	ITEM ALTERNATIVE	CODE
8	11	A	52.221
		B	51.360
		C	49.806
		D	47.951
		E	46.415
		F	45.519
		G	44.652
		H	43.287
		I	43.066
		J	42.337
		NR	39.681
9	12	A	52.822
		B	50.760
		C	45.920
		D	43.700
		E	43.024
		F	41.906
		G	41.927
		H	41.150
		I	39.794
		J	42.579
		NR	41.756

APPENDIX A (continued)

VARIABLE NUMBER	ITEM NUMBER	ITEM ALTERNATIVE	CODE
10	13	A	47.076
		B	50.723
		NR	39.911
11	14	A	45.557
		B	50.500
		C	52.663
		D	49.934
		NR	39.613
12	15	A	44.523
		B	40.441
		C	42.627
		D	46.089
		E	49.109
		F	50.732
		G	51.830
		H	52.451
		I	52.915
		J	52.065
		NR	40.919

APPENDIX A (continued)

VARIABLE NUMBER	ITEM NUMBER	ITEM ALTERNATIVE	CODE
13	16	A	51.329
		B	46.631
		C	47.142
		D	41.438
		E	42.770
		F	45.075
		G	44.688
		H	45.652
		NR	41.598
14	17	A	50.739
		B	44.946
		C	46.792
		D	41.880
		E	43.215
		F	43.744
		G	43.746
		H	43.186
		NR	41.285
15	18	A	52.674
		B	52.299

APPENDIX A (continued)

VARIABLE NUMBER	ITEM NUMBER	ITEM ALTERNATIVE	CODE
		C	53.451
		D	50.060
		E	53.877
		F	50.397
		G	43.316
		H	48.657
		I	56.597
		J	51.000
		K	43.057
		NR	42.599
16	19	A	44.569
		B	48.267
		C	49.109
		D	51.845
		E	54.281
		F	54.662
		G	55.840
		H	57.925
		I	45.414
		NR	42.166

APPENDIX A (continued)

VARIABLE NUMBER	ITEM NUMBER	ITEM ALTERNATIVE	CODE
17	20	A	43.460
		B	46.732
		C	48.030
		D	52.054
		E	55.302
		F	55.235
		G	55.685
		H	55.533
		I	44.875
		NR	41.984
	21	OMIT	
18	22	A	51.387
		B	47.341
		C	48.065
		D	40.797
		E	44.904
		F	43.146
		NR	44.391
19	23	A	49.316
		B	49.899

APPENDIX A (continued)

VARIABLE NUMBER	ITEM NUMBER	ITEM ALTERNATIVE	CODE
20	24	A	51.520
		B	51.541
		C	46.708
		D	40.265
		E	46.202
		NR	41.838
21	25	A	51.577
		B	51.511
		C	46.815
		D	40.933
		E	46.659
		NR	43.289
22	26	A	50.896
		B	49.926
		C	48.775
		D	47.935
		NR	42.728
23	27	A	42.570
		B	44.251
		C	48.193

APPENDIX A (continued)

VARIABLE NUMBER	ITEM NUMBER	ITEM ALTERNATIVE	CODE
		D	47.017
		E	53.014
		F	55.592
		G	47.354
		H	48.149
		NR	42.514
24	23	A	41.178
		B	44.095
		C	48.189
		D	47.073
		E	52.682
		F	55.075
		G	45.337
		H	48.023
		NR	40.953
25	29	A	49.451
		B	50.616
		C	50.746
		D	51.770
		E	53.432

APPENDIX A (continued)

VARIABLE NUMBER	ITEM NUMBER	ITEM ALTERNATIVE	CODE
		F	47.742
		NR	41.739
26	30	A	45.153
		B	48.671
		C	52.370
		D	51.916
		E	47.664
		NR	38.946
	31	A	50.395
		B	43.532
		NR	38.347
	32	A	51.393
		B	43.412
		NR	38.061
	33	A	50.696
		B	45.905
		NR	37.850

APPENDIX A (continued)

VARIABLE NUMBER	ITEM NUMBER	ITEM ALTERNATIVE	CODE
	34	A	50.427
		B	38.781
		NR	38.081
	35	A	50.609
		B	40.827
		NR	38.073
	36	A	51.506
		B	44.988
		NR	37.710
	37	A	50.922
		B	42.936
		NR	38.220
	38	A	51.763
		B	43.148
		NR	37.929

APPENDIX A (continued)

VARIABLE NUMBER	ITEM NUMBER	ITEM ALTERNATIVE	CODE
	39	A	51.106
		B	45.440
		NR	40.132
	40	OMIT	
	41	A	46.153
		B	49.887
		C	51.824
		D	53.228
		E	49.019
		NR	39.161
	42	A	43.441
		B	45.720
		C	49.904
		D	52.915
		E	53.997
		NR	40.637

Create The Following Variables By Summing Values for the Items Indicated.

APPENDIX A (continued)

VARIABLE NUMBER	ITEM NUMBER	ITEM ALTERNATIVE	CODE
27		SM #1 - Sum The Values For 31, 32, 33, 34, 37, 38.	
28		SM #2 - Sum the Values for 35, 36, 39, 41, 42.	
		Retain Only SM's 1 and 2 Not Items 31 - 42.	
	43	OMIT	
29	44	A	51.694
		B	48.127
		NR	37.364
	45	OMIT	
30	46	A	50.984
		B	50.670
		C	49.091
		D	48.868
		E	49.616
		NR	37.675
31	47	A	50.793
		B	48.704

APPENDIX A (continued)

VARIABLE NUMBER	ITEM NUMBER	ITEM ALTERNATIVE	CODE
		C	48.834
		D	49.202
		E	49.601
		F	51.044
		G	51.091
		NR	37.836
32	48	A	42.040
		B	44.127
		C	48.605
		D	48.643
		E	52.830
		F	55.153
		NR	39.857
	49	OMIT	
	50	"	
	51	"	
	52	"	
33	53	A	43.316
		B	49.376

APPENDIX A (continued)

VARIABLE NUMBER	ITEM NUMBER	ITEM ALTERNATIVE	CODE
		C	46.494
		D	44.470
		NR	38.943
34	54	A	47.434
		B	50.465
		C	51.046
		D	51.588
		E	51.672
		F	52.440
		NR	39.464
35	55	A	48.262
		B	49.291
		C	52.058
		D	52.968
		E	51.927
		F	51.348
		G	47.280
		NR	39.479

APPENDIX A (continued)

VARIABLE NUMBER	ITEM NUMBER	ITEM ALTERNATIVE	CODE
36	56	A	43.316
		B	45.974
		C	47.180
		D	50.704
		E	52.532
		NR	40.345
37	57	A	52.054
		B	50.862
		C	46.459
		D	41.923
		E	43.736
		NR	39.871
38	58	A	46.306
		B	48.826
		C	50.771
		D	51.664
		E	51.224
		F	50.986
		G	47.187
		NR	38.981

APPENDIX A (continued)

VARIABLE NUMBER	ITEM NUMBER	ITEM ALTERNATIVE	CODE
	59	OMIT	
39	60	A	50.835
		B	49.400
		C	45.758
		D	44.192
		E	38.956
		NR	38.956
	61	OMIT	
	62	"	
	63	"	
	64	"	
	65	A	1
		B	0
		C	0
		NR	0
	66	OMIT	
	67	A	1
		B	0

APPENDIX A (continued)

VARIABLE NUMBER	ITEM NUMBER	ITEM ALTERNATIVE	CODE
		C	0
		NR	0
	68	A	1
		B	0
		C	0
		NR	0
	69	A	0
		B	1
		C	1
		D	0
		NR	0
	70	A	0
		B	1
		C	1
		D	0
		NR	0
40		Form SM # 3 By Summing The Values for 65, 67, 68, 69, 70. Retain SM # 3 But Not The Items.	

APPENDIX A (continued)

VARIABLE NUMBER	ITEM NUMBER	ITEM ALTERNATIVE	CODE
	71 - 85	OMIT	
41	86	A	51.152
		B	50.110
		C	49.465
		D	50.152
		E	50.007
		F	49.284
		NR	39.910
42	87	A	50.788
		B	51.589
		C	50.227
		D	45.683
		NR	43.153
43	88	A	55.228
		B	53.790
		C	48.410
		D	42.830
		E	40.151
		NR	41.215

APPENDIX A (continued)

VARIABLE NUMBER	ITEM NUMBER	ITEM ALTERNATIVE	CODE
	89 - 90	OMIT	
44	91	A	51.372
		B	51.719
		C	48.080
		D	41.972
		E	50.901
		NR	40.517
45	92	A	50.358
		B	47.750
		C	54.524
		NR	39.870
46	93	A	41.718
		B	43.590
		C	53.107
		NR	39.605
47	94	A	46.333
		B	49.507
		C	53.389
		NR	40.155

APPENDIX A (continued)

VARIABLE NUMBER	ITEM NUMBER	ITEM ALTERNATION	CODE
48	95	A	49.617
		B	50.855
		C	51.910
		NR	39.958
49	96	A	47.428
		B	50.021
		C	52.779
		NR	40.401
50	97	A	47.620
		B	51.243
		C	53.147
		NR	40.488
51	98	A	47.684
		B	49.695
		C	52.617
		NR	40.492
52	99	A	49.262
		B	48.605
		C	53.254
		NR	40.746

APPENDIX A (continued)

VARIABLE NUMBER	ITEM NUMBER	ITEM ALTERNATIVE	CODE
53	100	A	47.443
		B	49.507
		C	53.628
		NR	40.610
54	101	A	51.289
		B	50.188
		C	49.058
		NR	40.939
55	102	A	51.457
		B	49.988
		C	48.766
		NR	41.115
56	103	A	43.994
		B	47.091
		C	53.046
		NR	41.092
	104	OMIT	
	105	"	

APPENDIX A (continued)

VARIABLE NUMBER	ITEM NUMBER	ITEM ALTERNATIVE	CODE
57	106	A	51.639
		B	45.992
		C	46.913
		D	49.062
		E	44.693
		F	47.817
		G	43.509
		H	45.023
		I	55.175
		J	49.397
		K	47.987
		NR	40.878
	107	OMIT	

APPENDIX B

Means, Standard Deviations and Intercorrelations of Items From the Ninth Grade Student Questionnaire*

*The reader will note that the means of the criterion scaled variables are slightly greater than 50. This is because individuals who had smudged an answer to a question or gave more than one answer were included as non-respondents in the criterion scale analysis when the mean of 50 was assigned but their smudged or double responses were eliminated from that particular variable in these computations. Since these people were assigned a low score in the criterion scale analysis, eliminating them would tend to raise the means slightly.

ALL VARIABLES

THE NUMBER OF OBSERVATIONS IS 12000.

VARIABLE	SUMS	SUMS OF SQUARES	MEAN	SIGMA(N)	SIGMA(N-1)
1	601610.4219	30164155.7500	50.1342	0.4914	0.4914
2	601963.6719	30345274.5000	50.1636	3.5188	3.5190
3	601624.9922	30177746.7500	50.1354	1.1191	1.1191
4	603240.2188	30364415.7500	50.2700	1.8147	1.8148
5	601787.4453	30431922.5000	50.1490	4.5909	4.5911
6	601746.6797	30252430.5000	50.1456	2.5415	2.5416
7	602072.4297	30321085.0000	50.1727	3.0752	3.0754
8	602110.1406	30287476.5000	50.1758	2.5181	2.5182
9	602453.2266	30352231.7500	50.2044	2.9778	2.9779
10	601983.2813	30219727.7500	50.1653	1.3251	1.3252
11	601929.6719	30215208.0000	50.1608	1.3519	1.3519
12	601597.2422	30237712.5000	50.1331	2.5458	2.5460
13	602151.9531	30278154.2500	50.1793	2.2835	2.2836
14	602335.3984	30274932.2500	50.1946	1.8470	1.8471
15	604655.3516	30618918.0000	50.3879	3.5541	3.5542
16	602343.7734	30403075.2500	50.1953	3.7443	3.7445
17	602301.2344	30396362.2500	50.1918	3.7171	3.7172
18	603117.5156	30377419.5000	50.2598	2.3248	2.3249
19	602120.6328	30218967.0000	50.1767	0.7376	0.7377
20	602012.1719	30290593.5000	50.1677	2.7240	2.7241
21	602369.4453	30318591.7500	50.1975	2.6010	2.6011
22	602331.4688	30246287.2500	50.1943	1.0283	1.0283
23	602472.2109	30404949.5000	50.2060	3.6196	3.6198
24	602271.3594	30378249.2500	50.1893	3.5436	3.5437
25	602071.0156	30230094.7500	50.1726	1.3734	1.3735
26	602152.8672	30284297.7500	50.1794	2.3914	2.3915
27	3560867.8125	0.10692549E 10	296.7390	32.4122	32.4136
28	2958602.5625	0.73913446E 09	246.5502	28.4171	28.4183
29	602301.1484	30269053.5000	50.1918	1.7911	1.7912
30	602697.3594	30279728.5000	50.2248	0.8844	0.8845
31	603160.8516	30327288.5000	50.2634	0.9297	0.9297
32	603030.9609	30496516.7500	50.2526	4.0068	4.0070
33	603531.5078	30479740.7500	50.2943	3.2345	3.2347
34	603271.8984	30358675.5000	50.2727	1.5967	1.5968
35	603325.2422	30387683.7500	50.2771	2.1260	2.1261
36	603761.7031	30456026.2500	50.3135	2.5606	2.5607
37	603740.9141	30465477.2500	50.3117	2.7420	2.7421
38	603887.9766	30421212.7500	50.3240	1.6113	1.6114
39	603626.0391	30390057.2500	50.3022	1.4821	1.4821
40	12679.9999	25397.9990	1.0567	1.0000	1.0000
41	606713.5156	30682637.2500	50.5595	0.7922	0.7922
42	606390.5234	30661750.7500	50.5325	1.2681	1.2681
43	607311.7031	30891111.2500	50.6093	3.5996	3.5998
44	607626.1016	30805617.5000	50.6355	1.7833	1.7834
45	607927.3438	30866680.5000	50.6606	2.3929	2.3930
46	608176.0078	31057540.0000	50.6813	4.4194	4.4195

EMP-FACTOR ANALYSIS 9TH GRADE

ALL VARIABLES

THE NUMBER OF OBSERVATIONS IS 12000.

VARIABLE	SUMS	SUMS OF SQUARES	MEAN	SIGMA(N)	SIGMA(N-1)
47	608113.0469	30921801.5000	50.6761	2.9582	2.9583
48	608261.4922	30845001.7500	50.6885	1.0474	1.0475
49	608398.5313	30899284.7500	50.6999	2.1125	2.1126
50	608481.1172	30912158.0000	50.7068	2.1995	2.1996
51	608071.1172	30866623.7500	50.6726	2.1230	2.1231
52	608472.2266	30904099.7500	50.7060	2.0594	2.0595
53	608546.6094	30946661.0000	50.7122	2.6757	2.6758
54	608690.3672	30884218.0000	50.7242	0.8605	0.8607
55	608642.4297	30883443.5000	50.7202	1.0399	1.0399
56	608841.6641	31027659.0000	50.7368	3.3786	3.3787
57	610922.8672	31248109.0000	50.9102	3.4866	3.4868
58	435036.9961	16781644.7500	36.2531	9.1752	9.1756
59	596978.9922	32836552.2500	49.7482	16.1707	16.1714
60	607704.9922	33621054.5000	50.6421	15.3992	15.3998
61	684424.9922	43201482.5000	57.0354	18.6302	18.6310
62	539247.9922	27057599.2500	44.9373	15.3439	15.3446

EMP-FACTOR ANALYSIS 9TH GRADE

CORRELATION MATRIX ALL VARIABLES

	1	2	3	4	5	6	7
1	1.000000	0.145824	0.247106	0.101829	0.039403	0.052795	0.037469
2	0.145824	1.000000	0.110756	0.093120	0.161798	0.144536	0.188245
3	0.247144	0.110756	1.000000	0.072024	0.122362	0.087117	0.067952
4	0.101806	0.093120	0.072024	1.000000	0.107747	0.128687	0.165629
5	0.039412	0.161798	0.122362	0.107747	1.000000	0.299390	0.316655
6	0.052795	0.144533	0.087117	0.128687	0.299388	1.000000	0.670256
7	0.037455	0.188245	0.067946	0.165629	0.316653	0.670256	1.000000
8	0.072123	0.147116	0.090223	0.150587	0.212446	0.275131	0.609852
9	0.067766	0.228897	0.109236	0.133695	0.182530	0.212964	0.424993
10	0.095078	0.086693	0.145261	-0.009391	0.134785	0.068973	0.054650
11	0.122927	0.087116	0.153053	0.051605	0.101097	0.087002	0.079563
12	0.116464	0.158182	0.113555	0.112151	0.210856	0.118611	0.054782
13	0.077732	0.168799	0.102558	0.046674	0.270294	0.087103	0.167940
14	0.120843	0.184577	0.113893	0.051227	0.184435	0.097190	0.121569
15	0.030739	0.167977	0.052422	0.182267	0.294104	0.194281	0.225702
16	0.053372	0.203131	0.067573	0.195772	0.243491	0.186213	0.246067
17	0.049840	0.220023	0.075972	0.180528	0.222998	0.194672	0.264061
18	0.037674	0.164686	0.136586	0.063700	0.243435	0.104140	0.175786
19	0.273621	0.053567	0.194000	0.063513	0.132058	-0.022359	0.004785
20	0.025633	0.181517	0.094177	0.060284	0.079315	0.131804	0.130405
21	0.066550	0.171429	0.120425	0.079130	0.108643	0.129893	0.146274
22	0.188289	0.107192	0.131150	0.073864	0.041780	-0.125735	0.151031
23	-0.022335	0.230300	0.069310	0.151838	0.100228	0.167738	0.222517
24	-0.027660	0.238581	0.075598	0.128663	0.064825	0.160797	0.199714
25	0.186619	0.135985	0.107813	0.064628	0.023139	0.065975	0.096988
26	0.180838	0.177806	0.108846	0.079608	0.111636	0.127276	0.138310
27	0.057947	0.145371	0.069594	0.092010	0.219946	0.126032	0.153711
28	0.072443	0.156323	0.103099	0.098721	0.195064	0.118049	0.156366
29	0.128923	0.130374	0.084729	0.287717	0.086530	0.116704	0.149604
30	0.272498	0.146608	0.191502	-0.007022	0.087996	0.085446	0.107979
31	0.156227	0.111147	0.104188	-0.007458	0.072180	0.067136	0.090119
32	-0.000254	0.266227	0.063485	0.150041	0.078038	0.159249	0.209341
33	0.013434	0.232544	0.048535	0.132323	0.003628	0.141114	0.185853
34	0.190101	0.106999	0.071704	0.043843	0.005784	0.028062	0.045105
35	0.083651	0.093286	0.076900	0.071915	0.184963	0.110603	0.122503
36	0.145349	0.194211	0.079706	0.061539	0.080528	0.101949	0.115745
37	0.099662	0.196662	0.102731	0.034386	0.045083	0.099374	0.113798
38	0.211849	0.124002	0.116033	0.066359	0.140817	0.097826	0.104857
39	0.266278	0.174827	0.167954	0.017181	0.060394	0.083640	0.105874
40	-0.057005	0.014577	-0.015017	0.017529	-0.066860	0.001033	-0.011645
41	0.420738	0.095171	0.141354	0.067343	0.029181	0.081614	0.100381
42	0.172608	0.099010	0.104822	0.040368	0.032101	0.069332	0.085575
43	0.051526	0.202219	0.056109	0.077955	0.039032	0.107417	0.138310
44	0.079852	0.124756	0.093693	0.040151	0.006540	-0.056200	0.065656
45	0.065959	0.098133	0.036737	0.065387	0.100917	0.079700	0.087058
46	0.075514	0.214454	0.097683	0.100197	0.271148	0.172155	0.186736
47	0.105561	0.157661	0.059621	0.063287	0.133933	0.114181	0.133196
48	0.285380	0.072068	0.129958	0.096778	0.078418	0.063133	0.055028
49	0.179905	0.136089	0.083699	0.056260	0.096405	0.085126	0.092252
50	0.107146	0.082955	0.062244	0.046557	0.154648	0.080636	0.086319

EMP-FACTOR ANALYSIS 9TH GRADE

CORRELATION MATRIX ALL VARIABLES

	1	2	3	4	5	6	7
51	0.116279	0.112352	0.082078	0.054751	0.121093	0.095246	0.10607[illegible]
52	0.052512	0.096142	0.052691	0.042928	0.009713	0.053978	0.059247
53	0.124327	0.132434	0.070459	0.054360	0.067300	0.072537	0.078832
54	0.284961	0.083562	0.187541	0.045726	0.030024	0.052701	0.055046
55	0.202977	0.080725	0.188041	0.061920	0.018638	0.062187	0.071823
56	0.117321	0.199601	0.091655	0.086836	0.162813	0.147100	0.155755
57	0.159560	0.183451	0.077671	0.133392	0.081735	0.131432	0.161145
58	0.067422	0.275119	0.087514	0.146422	0.355420	0.197845	0.222498
59	-0.031722	0.313344	0.092800	0.167675	0.448531	0.269377	0.310113
60	0.024876	0.330074	0.089261	0.193620	0.434691	0.265461	0.308450
61	0.122555	0.328484	0.089641	0.154315	0.369287	0.222457	0.258187
62	-0.017915	0.286364	0.088216	0.114439	0.373691	0.208378	0.24163[illegible]

CORRELATION MATRIX ALL VARIABLES

	8	9	10	11	12	13	14
1	0.072123	0.067765	0.095078	0.122927	0.116464	0.077713	0.120866
2	0.747116	0.228897	0.086593	0.087112	0.158182	0.168799	0.18458.
3	0.090223	0.109236	0.145275	0.133066	0.113562	0.102558	0.113901
4	0.150582	0.133695	-0.009391	0.051605	0.112151	0.046669	0.051207
5	0.212446	0.182530	0.134785	0.101097	0.210856	0.270294	0.184435
6	0.275128	0.212964	0.068973	0.086995	0.018681	0.087403	0.097190
7	0.609849	0.424993	0.054650	0.079563	0.054782	0.167937	0.121569
8	1.000000	0.649378	0.064012	0.063897	0.083664	0.152824	0.129361
9	0.649376	1.000000	0.059817	0.070993	0.138140	0.177748	0.148395
10	0.064012	0.059817	1.000000	0.134120	0.084503	0.051766	0.041120
11	0.063897	0.070998	0.134120	1.000000	0.097421	0.035154	0.048092
12	0.083661	0.138140	0.084497	0.097421	1.000000	0.210211	0.140818
13	0.152824	0.177751	0.051766	0.035160	0.210214	1.000000	0.410048
14	0.129361	0.148395	0.041120	0.048092	0.140823	0.410048	1.000000
15	0.178494	0.211283	0.047296	0.079549	0.222972	0.233970	0.196345
16	0.229774	0.270314	0.080279	0.112124	0.253061	0.177635	0.096077
17	0.237730	0.281588	0.105734	0.128598	0.249630	0.142491	0.117416
18	0.187200	0.201646	0.081628	0.031161	0.187485	0.539208	0.216486
19	0.064300	0.050913	0.082460	0.094325	0.108740	0.163927	0.052264
20	0.121444	0.152044	0.085401	0.091413	0.127182	0.096717	0.120373
21	0.133577	0.165980	0.099782	0.091416	0.147080	0.183216	0.106842
22	0.147513	0.146059	0.076981	0.077273	0.109411	0.093241	0.112336
23	0.201074	0.245966	0.055532	0.086287	0.190249	0.169364	0.113958
24	0.182086	0.242432	0.051074	0.093101	0.168511	0.109835	0.141607
25	0.114825	0.124826	0.079188	0.088349	0.122328	0.111284	0.094459
26	0.131611	0.161336	0.118473	0.113572	0.163449	0.101645	0.115883
27	0.130283	0.147904	0.053196	0.047367	0.192648	0.139172	0.128555
28	0.127763	0.156242	0.074966	0.067571	0.197001	0.129892	0.137724
29	0.146687	0.157522	-0.035188	0.086899	0.133138	0.059982	0.068899
30	0.051121	0.080606	0.115808	0.089961	0.108745	0.148882	0.113413
31	0.036985	0.055568	0.054655	0.029440	0.087275	0.121432	0.085015
32	0.195370	0.252505	0.055406	0.114106	0.178822	0.106295	0.109683
33	0.163502	0.230549	0.031573	0.097883	0.156751	0.087612	0.086721
34	0.073172	0.096500	-0.004057	0.065745	0.086019	0.033391	0.062792
35	0.094128	0.113358	0.034534	0.065289	0.119400	0.108326	0.077183
36	0.110318	0.148746	0.074746	0.078595	0.103681	0.085010	0.111716
37	0.109021	0.151882	0.089731	0.091122	0.113797	0.100634	0.096542
38	0.106280	0.116811	0.091383	0.067742	0.119450	0.106934	0.123202
39	0.114744	0.156539	0.137519	0.069761	0.100817	0.155194	0.174076
40	-0.016264	0.015254	-0.045607	0.044009	0.057653	-0.007359	-0.013000
41	0.074005	0.070397	0.082479	0.008968	0.048190	0.067062	0.068060
42	0.081196	0.102897	0.028292	0.076296	0.095355	0.071069	0.085792
43	0.110433	0.163015	0.062316	0.095252	0.126081	0.102780	0.084698
44	0.073636	0.113239	0.035625	0.056404	0.064166	0.042294	0.039016
45	0.052544	0.080702	0.030314	0.055257	0.092401	0.038028	0.017742
46	0.161518	0.184869	0.089379	0.083480	0.149525	0.125460	0.121130
47	0.116207	0.139226	0.074334	0.034830	0.110961	0.110703	0.086656
48	0.061554	0.051297	0.088856	0.097413	0.085337	0.046016	0.067529
49	0.097237	0.104687	0.046103	0.053850	0.092491	0.074915	0.064370
50	0.063667	0.060954	0.074837	0.044204	0.068290	0.068839	0.053959

CORRELATION MATRIX ALL VARIABLES

	8	9	10	11	12	13	14
51	0.089749	0.095209	0.070662	0.065316	0.077115	0.097122	0.063998
52	0.062102	0.072457	0.022497	0.013529	0.045215	0.040623	0.053279
53	0.086694	0.099427	0.047087	0.040811	0.080734	0.055765	0.052116
54	0.065811	0.083080	0.092286	0.077193	0.081668	0.072689	0.072738
55	0.082048	0.084850	0.082620	0.067412	0.099144	0.062939	0.119745
56	0.132654	0.156026	0.096415	0.077655	0.146764	0.116460	0.114809
57	0.143102	0.177744	0.047119	0.095885	0.133487	0.066191	0.085555
58	0.178110	0.231951	0.062053	0.083400	0.217412	0.196559	0.175232
59	0.260648	0.291457	0.126355	0.120258	0.235313	0.221370	0.164768
60	0.250299	0.288556	0.105610	0.116548	0.228265	0.204107	0.159846
61	0.216977	0.248478	0.110845	0.101843	0.201067	0.190275	0.166770
62	0.193134	0.235137	0.108087	0.096058	0.189758	0.209637	0.159371

CORRELATION MATRIX ALL VARIABLES

	15	16	17	18	19	20	21
1	0.030739	0.053361	0.049840	0.037674	0.273621	0.025633	0.066550
2	0.167975	0.203129	0.220023	0.164686	0.053567	0.181517	0.171429
3	0.052422	0.067573	0.075972	0.136594	0.194026	0.094177	0.120432
4	0.183267	0.195769	0.180525	0.063700	0.063513	0.060284	0.079130
5	0.294104	0.243489	0.222997	0.243437	0.132058	0.079315	0.108645
6	0.194278	0.186210	0.194669	0.104140	-0.022359	0.131804	0.129893
7	0.225702	0.246066	0.264061	0.175786	0.004785	0.130405	0.146274
8	0.178496	0.229772	0.237730	0.187204	0.064300	0.121447	0.133577
9	0.211283	0.270314	0.281587	0.201646	0.050913	0.152044	0.165980
10	0.047296	0.080275	0.105734	0.081628	0.082460	0.085401	0.099782
11	0.079549	0.112124	0.128598	0.031168	0.094325	0.091415	0.091416
12	0.222972	0.253059	0.249628	0.187485	0.108740	0.127182	0.147080
13	0.233972	0.177635	0.142493	0.539212	0.163940	0.096721	0.183220
14	0.106345	0.093074	0.117413	0.216486	0.052264	0.120373	0.106841
15	1.000000	0.441949	0.335643	0.284929	0.072743	0.172502	0.223212
16	0.441951	1.000000	0.574836	0.215576	0.076145	0.199705	0.236702
17	0.335643	0.574836	1.000000	0.153288	-0.008951	0.200944	0.187448
18	0.284929	0.215573	0.153288	1.000000	0.169554	0.126978	0.188794
19	0.072743	0.076137	-0.008958	0.169554	1.000000	0.021597	0.071135
20	0.172502	0.199703	0.200944	0.126978	0.021597	1.000000	0.709453
21	0.223212	0.236700	0.187448	0.188794	0.071135	0.709453	1.000000
22	0.123032	0.168639	0.169397	0.109912	0.109482	0.224425	0.265121
23	0.281635	0.368127	0.335662	0.165631	0.030563	0.297727	0.339273
24	0.238955	0.318736	0.329127	0.122629	0.008879	0.334371	0.296286
25	0.153280	0.198860	0.198977	0.115283	0.123443	0.147540	0.162105
26	0.178056	0.242323	0.251470	0.139495	0.073707	0.208788	0.206332
27	0.159218	0.156331	0.178587	0.179568	0.040166	0.117802	0.130816
28	0.190419	0.218823	0.231654	0.145306	0.049773	0.153571	0.162710
29	0.166246	0.218509	0.227116	0.070989	0.090604	0.059409	0.063998
30	0.037924	0.042244	0.075589	0.114097	0.223788	0.072267	0.086453
31	0.031066	0.029272	0.049424	0.082800	0.138348	0.050307	0.077123
32	0.254617	0.334296	0.308673	0.130959	0.013604	0.302949	0.271801
33	0.249533	0.333965	0.307037	0.100796	0.003475	0.287213	0.272000
34	0.078724	0.140503	0.130814	0.030901	0.049420	0.126301	0.140154
35	0.126349	0.151609	0.131694	0.107100	0.085034	0.113769	0.124458
36	0.120496	0.145594	0.137998	0.097621	0.032561	0.207636	0.192060
37	0.132249	0.163173	0.149363	0.122458	0.054900	0.508744	0.459328
38	0.099377	0.102642	0.108867	0.098176	0.122643	0.102322	0.112519
39	0.079471	0.070778	0.074667	0.159033	0.148049	0.126422	0.142933
40	0.074139	0.124695	0.113851	-0.013718	-0.050532	0.082791	0.082873
41	0.030294	0.034936	0.040937	0.055712	0.202755	0.042992	0.073236
42	0.091006	0.126205	0.115472	0.101508	0.092542	0.158873	0.166853
43	0.189199	0.227359	0.228815	0.101897	0.043483	0.272298	0.264347
44	0.076628	0.096029	0.104695	0.042387	0.037345	0.277168	0.262382
45	0.130944	0.142255	0.149780	0.034798	0.036046	0.111648	0.109282
46	0.191725	0.200174	0.185113	0.148080	0.059478	0.181606	0.178040
47	0.146525	0.162364	0.152235	0.104600	0.077352	0.135403	0.129676
48	0.073855	0.089438	0.079670	0.027351	0.197321	0.062598	0.060473
49	0.104717	0.125820	0.129736	0.074920	0.071405	0.116829	0.119810
50	0.100610	0.084683	0.090358	0.067437	0.074091	0.023673	0.024876

CORRELATION MATRIX ALL VARIABLES

	15	16	17	18	19	20	21
51	0.105514	0.117581	0.104824	0.086025	0.105896	0.116752	0.112128
52	0.085830	0.114424	0.117767	0.042233	0.062494	0.134506	0.121541
53	0.104683	0.137843	0.131871	0.067913	0.061780	0.136593	0.123190
54	0.066599	0.066874	0.073838	0.079602	0.235819	0.117784	0.151368
55	0.073871	0.104092	0.102000	0.043534	0.188728	0.165921	0.154757
56	0.175310	0.193199	0.200408	0.134988	0.062194	0.196461	0.181513
57	0.216319	0.220436	0.224933	0.078474	0.032345	0.189862	0.185527
58	0.253099	0.257580	0.257199	0.194262	0.036704	0.186629	0.189750
59	0.346821	0.364791	0.360631	0.221548	0.048717	0.250100	0.244417
60	0.360447	0.380847	0.370261	0.202230	0.041697	0.250550	0.246766
61	0.291592	0.295668	0.296265	0.181597	0.041835	0.224608	0.214415
62	0.296209	0.296478	0.290028	0.203988	0.041006	0.242977	0.234543

CORRELATION MATRIX ALL VARIABLES

	22	23	24	25	26	27	28
1	0.188289	-0.022323	-0.027660	0.186619	0.180838	0.057947	0.072447
2	0.107192	0.230300	0.238579	0.135985	0.177804	0.145369	0.156313
3	0.131168	0.069315	0.075598	0.107813	0.108846	0.069599	0.103099
4	0.073853	0.151838	0.128660	0.064628	0.079608	0.092010	0.098721
5	0.041780	0.100228	0.064825	0.023139	0.111696	0.219946	0.195064
6	0.125735	0.167740	0.160797	0.065975	0.127273	0.126030	0.118047
7	0.151031	0.222517	0.199712	0.096988	0.138307	0.153711	0.156364
8	0.147513	0.201074	0.182086	0.114831	0.131611	0.130283	0.127763
9	0.146059	0.245966	0.242432	0.124826	0.161336	0.147899	0.156242
10	0.076981	0.053532	0.051074	0.079200	0.118466	0.053196	0.07496.
11	0.077273	0.086292	0.093101	0.088361	0.113572	0.047367	0.06757.
12	0.109411	0.190249	0.168508	0.122328	0.163449	0.192646	0.196999
13	0.093241	0.169367	0.109835	0.111291	0.101648	0.139172	0.129892
14	0.112336	0.113961	0.141603	0.094459	0.115878	0.128555	0.137722
15	0.123032	0.281637	0.238955	0.153280	0.178056	0.159216	0.190419
16	0.168539	0.368129	0.318736	0.198064	0.242323	0.156331	0.218823
17	0.169403	0.335665	0.329127	0.198981	0.251470	0.178587	0.231654
18	0.109903	0.165634	0.122629	0.115283	0.139492	0.179568	0.145303
19	0.109482	0.030563	0.008871	0.123463	0.073696	0.040166	0.049765
20	0.224417	0.297729	0.334371	0.147546	0.208785	0.117802	0.153571
21	0.265121	0.339273	0.296284	0.162105	0.206329	0.130816	0.162710
22	1.000000	0.232501	0.227616	0.183304	0.277323	0.068880	0.142874
23	0.232501	1.000000	0.825380	0.177869	0.239349	0.141728	0.195351
24	0.227616	0.825381	1.000000	0.187263	0.247963	0.142244	0.190673
25	0.183304	0.177869	0.187259	1.000000	0.206141	0.085283	0.141180
26	0.277323	0.239351	0.247963	0.206148	1.000000	0.115627	0.186163
27	0.068880	0.141728	0.142244	0.085283	0.115627	1.000000	0.857828
28	0.142874	0.195353	0.190673	0.141180	0.186163	0.857829	1.000000
29	0.096217	0.161053	0.139668	0.108468	0.103030	0.130325	0.125720
30	0.150139	0.077943	0.079270	0.169637	0.126830	0.062506	0.091141
31	0.079001	0.062666	0.069316	0.127739	0.076681	0.060637	0.090782
32	0.207378	0.639231	0.653872	0.173098	0.227453	0.138437	0.198712
33	0.221479	0.568791	0.571276	0.191196	0.225964	0.105518	0.188691
34	0.176363	0.156386	0.158754	0.163084	0.214242	0.014959	0.111859
35	0.111500	0.123325	0.124671	0.113979	0.129529	0.092069	0.109027
36	0.187441	0.255240	0.258682	0.131441	0.223844	0.099331	0.142727
37	0.206399	0.283236	0.311411	0.146842	0.206213	0.075722	0.136739
38	0.189264	0.107508	0.118181	0.095457	0.161069	0.100608	0.125096
39	0.203513	0.129749	0.130046	0.132745	0.136819	0.100145	0.116666
40	0.070392	0.132644	0.128326	0.120295	0.104179	0.092694	0.114156
41	0.116805	0.067462	0.061985	0.101485	0.080313	0.012833	0.044881
42	0.163467	0.159122	0.172018	0.129334	0.171665	0.071986	0.118594
43	0.151954	0.306077	0.310945	0.182945	0.192498	0.081774	0.136549
44	0.112966	0.171764	0.189072	0.108188	0.116542	0.071865	0.104695
45	0.051361	0.136604	0.145774	0.088963	0.088852	0.057385	0.073293
46	0.092272	0.206997	0.208759	0.075738	0.155687	0.169459	0.167535
47	0.117514	0.183219	0.184658	0.107927	0.164363	0.085744	0.109449
48	0.102441	0.070429	0.063005	0.099677	0.072684	0.032602	0.062092
49	0.102150	0.156082	0.157756	0.099734	0.141134	0.064885	0.082064
50	-0.012463	0.045972	0.035724	0.042358	0.049197	0.037193	0.032665

CORRELATION MATRIX ALL VARIABLES

	22	23	24	25	26	27	28
51	0.122920	0.135855	0.140376	0.088898	0.126997	0.099164	0.109760
52	0.103622	0.166839	0.183710	0.091448	0.119996	0.032089	0.086466
53	0.090539	0.156108	0.166249	0.105421	0.124836	0.056757	0.078274
54	0.198196	0.114527	0.125763	0.162344	0.158316	0.047619	0.106290
55	0.151539	0.122678	0.131738	0.146186	0.150341	0.082968	0.110243
56	0.147233	0.215398	0.234000	0.116398	0.209020	0.136397	0.154317
57	0.145813	0.325967	0.332938	0.132873	0.187118	0.109549	0.165594
58	0.056616	0.243718	0.236809	0.080039	0.153573	0.226845	0.227748
59	0.086826	0.356717	0.345750	0.127655	0.225677	0.245080	0.265579
60	0.087591	0.356406	0.342832	0.134370	0.218334	0.198209	0.218129
61	0.078160	0.290144	0.285939	0.121981	0.212583	0.207510	0.223153
62	0.067606	0.294362	0.293344	0.113700	0.166040	0.202228	0.211094

CORRELATION MATRIX ALL VARIABLES

	29	30	31	32	33	34	35
1	0.128923	0.272498	0.156227	-0.000254	0.013434	0.190101	0.083671
2	0.130374	0.146601	0.111147	0.266227	0.232544	0.106999	0.093289
3	0.084729	0.191502	0.104188	0.063485	0.048535	0.071704	0.076909
4	0.287710	-0.007035	-0.007471	0.150038	0.132317	0.043843	0.071915
5	0.086530	0.087995	0.072180	0.078038	0.003628	0.005784	0.184965
6	0.116704	0.085446	0.067136	0.159247	0.141111	0.028057	0.110607
7	0.149604	0.107979	0.090111	0.209339	0.185853	0.045101	0.122506
8	0.146687	0.051121	0.036985	0.195370	0.163602	0.073172	0.094131
9	0.157518	0.080598	0.055568	0.252503	0.230547	0.096500	0.113358
10	-0.035188	0.115808	0.054655	0.055406	0.031573	-0.004057	0.034534
11	0.086899	0.089961	0.029440	0.114106	0.097883	0.065745	0.065296
12	0.133138	0.108745	0.087266	0.178822	0.156751	0.086019	0.119400
13	0.059982	0.148893	0.121442	0.106295	0.087612	0.033397	0.108330
14	0.068893	0.113413	0.085025	0.109685	0.086721	0.062792	0.077183
15	0.166246	0.037917	0.031066	0.254617	0.249533	0.078724	0.126352
16	0.218512	0.042244	0.029272	0.334296	0.333967	0.140503	0.151611
17	0.227116	0.075589	0.049424	0.308673	0.307037	0.130814	0.131697
18	0.070984	0.114097	0.082790	0.130957	0.100796	0.030895	0.107100
19	0.090588	0.223788	0.138348	0.013604	0.003475	0.049420	0.085048
20	0.059409	0.072267	0.050307	0.302949	0.287213	0.126301	0.113769
21	0.063998	0.086453	0.077120	0.271801	0.271998	0.140149	0.124458
22	0.096217	0.150139	0.079001	0.207378	0.221479	0.176363	0.111510
23	0.161053	0.077937	0.062666	0.639231	0.568789	0.156386	0.123325
24	0.139668	0.079276	0.069316	0.653872	0.571276	0.158754	0.124674
25	0.108468	0.169637	0.127723	0.173094	0.191191	0.163075	0.113979
26	0.103030	0.126839	0.076681	0.227453	0.225964	0.214242	0.129529
27	0.130323	0.062506	0.060637	0.138437	0.105518	0.014959	0.092069
28	0.125720	0.091148	0.090782	0.198712	0.181691	0.111859	0.109027
29	1.000000	0.034587	0.037346	0.153078	0.163338	0.057846	0.082448
30	0.034587	1.000000	0.468260	0.066601	0.081497	0.054127	0.094034
31	0.037346	0.468260	1.000000	0.081280	0.065484	0.035536	0.067460
32	0.153078	0.066601	0.081280	1.000000	0.682605	0.208777	0.139106
33	0.163334	0.081497	0.065484	0.682605	1.000000	0.207638	0.122190
34	0.057839	0.054127	0.035536	0.208777	0.207638	1.000000	0.096556
35	0.082443	0.094034	0.067460	0.139106	0.122187	0.096550	1.000000
36	0.052103	0.094146	0.095578	0.355934	0.324945	0.216543	0.116969
37	0.035870	0.110803	0.077371	0.354385	0.341429	0.169178	0.122225
38	0.068179	0.109992	0.087409	0.135509	0.116624	0.148549	0.181146
39	0.042317	0.201087	0.148285	0.167073	0.148666	0.118558	0.107477
40	0.063327	0.000715	-0.017382	0.131339	0.174551	0.116409	0.035441
41	0.076439	0.197858	0.115558	0.054654	0.061857	0.041242	0.044161
42	0.058695	0.135995	0.079012	0.162463	0.190949	0.106289	0.078283
43	0.106060	0.083258	0.052394	0.348625	0.350331	0.176919	0.103903
44	0.037360	0.081856	0.033854	0.190392	0.205017	0.101627	0.043664
45	0.078017	0.043402	0.022860	0.162420	0.146050	0.095471	0.055122
46	0.097073	0.075308	0.089381	0.247547	0.183099	0.094724	0.152838
47	0.074847	0.084660	0.076556	0.230460	0.205354	0.108819	0.105363
48	0.077021	0.161469	0.088059	0.067947	0.057445	0.047908	0.076088
49	0.046981	0.096963	0.061419	0.167317	0.158886	0.098400	0.072451
50	0.020259	0.051802	0.039185	0.051702	0.024990	0.021143	0.042824

CORRELATION MATRIX ALL VARIABLES

	29	30	31	32	33	34	35
51	0.037207	0.095388	0.063650	0.161678	0.157190	0.082533	0.093919
52	0.043488	0.054752	0.039608	0.201540	0.201766	0.125385	0.064788
53	0.043074	0.059502	0.047696	0.203383	0.193663	0.138735	0.066676
54	0.085157	0.214909	0.097539	0.123342	0.136759	0.127014	0.099606
55	0.081583	0.161618	0.110418	0.137542	0.140873	0.107162	0.073944
56	0.074799	0.086822	0.087366	0.258813	0.232045	0.126494	0.117330
57	0.129813	0.064073	0.072505	0.413528	0.391435	0.179485	0.107002
58	0.168047	0.037952	0.059655	0.273919	0.203883	0.081718	0.153607
59	0.163959	0.073393	0.085475	0.390710	0.314071	0.148282	0.193489
60	0.175441	0.060299	0.072649	0.391397	0.322002	0.181235	0.193110
61	0.129288	0.070810	0.078327	0.337280	0.267609	0.164390	0.173989
62	0.127131	0.081837	0.079489	0.341220	0.274562	0.099606	0.186719

CORRELATION MATRIX ALL VARIABLES

	36	37	38	39	40	41	42
1	0.145349	0.099646	0.211875	0.266307	-0.057003	0.420738	0.172608
2	0.194211	0.196660	0.124006	0.174831	0.014577	0.095163	0.099035
3	0.079713	0.102731	0.116044	0.167954	-0.015017	0.141354	0.104822
4	0.061539	0.034382	0.066366	0.017181	0.017529	0.067329	0.040359
5	0.080630	0.045083	0.140820	0.060394	-0.066860	0.029181	0.032101
6	0.101949	0.099371	0.097826	0.083640	0.001033	0.081604	0.069332
7	0.115746	0.113795	0.104857	0.105874	-0.011645	0.100373	0.085575
8	0.110522	0.109018	0.106280	0.114744	-0.016264	0.074005	0.081196
9	0.148746	0.151880	0.116811	0.156539	0.015254	0.070397	0.102891
10	0.074753	0.089726	0.091383	0.137519	-0.045607	0.082479	0.028292
11	0.078501	0.091122	0.067752	0.069771	0.044009	0.008968	0.076296
12	0.103681	0.113794	0.119452	0.100817	0.057653	0.048180	0.095348
13	0.085014	0.100634	0.106939	0.155200	-0.007359	0.067062	0.071077
14	0.111721	0.096542	0.123209	0.174076	-0.013000	0.068045	0.085783
15	0.120496	0.132247	0.099877	0.079471	0.074139	0.030294	0.091006
16	0.145596	0.163173	0.102646	0.070781	0.124695	0.034936	0.126205
17	0.137992	0.149361	0.108871	0.074667	0.113851	0.040937	0.115472
18	0.097621	0.122455	0.098175	0.159033	-0.013718	0.055701	0.101502
19	0.032561	0.054890	0.122643	0.148069	-0.050532	0.202755	0.092542
20	0.207636	0.508741	0.102326	0.126422	0.082792	0.042992	0.158873
21	0.192064	0.459328	0.112519	0.142939	0.082873	0.073236	0.166847
22	0.187449	0.206399	0.189277	0.203527	0.070393	0.116805	0.163467
23	0.255240	0.283234	0.107508	0.129749	0.132644	0.067454	0.159118
24	0.258685	0.311411	0.118185	0.130050	0.128326	0.061985	0.172018
25	0.131441	0.146837	0.095457	0.132745	0.120295	0.101466	0.129322
26	0.223848	0.206213	0.161075	0.136819	0.104179	0.080313	0.171658
27	0.099333	0.075722	0.100611	0.100145	0.092694	0.012833	0.071986
28	0.142727	0.136739	0.125096	0.116666	0.114156	0.044881	0.118594
29	0.052107	0.035870	0.068179	0.042325	0.063527	0.076439	0.058695
30	0.094155	0.110795	0.110007	0.201103	0.000715	0.197858	0.135995
31	0.095578	0.077371	0.087423	0.148300	-0.017382	0.115558	0.078994
32	0.355934	0.354385	0.135512	0.167077	0.131339	0.054648	0.162465
33	0.324945	0.341427	0.116628	0.148670	0.174551	0.061857	0.190949
34	0.216548	0.169178	0.148557	0.118558	0.116409	0.041242	0.106279
35	0.116969	0.12222	0.181146	0.107470	0.035441	0.044149	0.078275
36	1.000000	0.339448	0.219470	0.274084	0.043415	0.067910	0.169358
37	0.339451	1.000000	0.174026	0.249655	0.076328	0.076577	0.197040
38	0.219470	0.174022	1.000000	0.209671	-0.006079	0.102368	0.147703
39	0.274084	0.249650	0.209680	1.000000	-0.040684	0.176862	0.194482
40	0.043415	0.076328	-0.006079	-0.040684	1.000000	-0.093493	0.113512
41	0.067921	0.076577	0.102385	0.176862	-0.093493	1.000000	0.083580
42	0.169358	0.197034	0.147713	0.194493	0.113512	0.083580	1.000000
43	0.217872	0.319311	0.075929	0.103587	0.157172	0.071452	0.251702
44	0.129744	0.293186	0.051985	0.094701	0.085903	0.093218	0.166855
45	0.094927	0.106876	0.020393	0.005728	0.028672	0.040676	0.038484
46	0.219092	0.187172	0.142066	0.120739	-0.033414	0.059366	0.070953
47	0.200589	0.176954	0.098437	0.126960	0.022904	0.070285	0.128270
48	0.044797	0.044437	0.093777	0.079234	-0.014143	0.190970	0.080261
49	0.161662	0.139494	0.103666	0.109213	0.005194	0.100189	0.106599
50	0.010931	0.012312	0.032173	0.025909	-0.044901	0.055922	0.024485

CORRELATION MATRIX ALL VARIABLES

	36	37	38	39	40	41	42
31	0.162804	0.126569	0.096634	0.135784	0.023394	0.066460	0.122281
32	0.158600	0.188752	0.056616	0.069826	0.031435	0.058358	0.090074
33	0.179172	0.180746	0.073362	0.096696	0.030412	0.080438	0.108785
34	0.180294	0.186764	0.165811	0.247253	0.029310	0.194133	0.199202
35	0.126796	0.189468	0.103793	0.165467	0.084751	0.134692	0.208085
36	0.239558	0.232880	0.149593	0.137046	0.023579	0.069604	0.165504
37	0.244873	0.229121	0.100149	0.100328	0.084571	0.091471	0.127414
38	0.209523	0.191722	0.142148	0.110846	-0.002171	0.057773	0.095366
39	0.238217	0.244455	0.130204	0.121808	0.004917	0.035072	0.095135
60	0.228991	0.236599	0.119575	0.089801	0.008439	0.054923	0.089328
61	0.254891	0.245138	0.154694	0.142842	-0.022039	0.087546	0.101740
62	0.221229	0.247502	0.126602	0.127767	0.001703	0.045735	0.099070

CORRELATION MATRIX ALL VARIABLES

	43	44	45	46	47	48	49
1	0.051514	0.079852	0.065959	0.075514	0.105546	0.285420	0.179905
2	0.202217	0.124756	0.098133	0.214454	0.157061	0.072068	0.136086
3	0.056109	0.093695	0.036745	0.097683	0.059621	0.129976	0.083699
4	0.077952	0.040145	0.065382	0.100195	0.063283	0.096778	0.056260
5	0.039032	0.006540	0.100917	0.271147	0.133933	0.078422	0.096405
6	0.107415	0.056200	0.079700	0.172153	0.114178	0.063133	0.085126
7	0.138308	0.065656	0.087055	0.186735	0.133194	0.055028	0.092251
8	0.110433	0.073636	0.052544	0.161518	0.116210	0.061554	0.097237
9	0.163015	0.113235	0.080702	0.184867	0.139226	0.051297	0.104687
10	0.062316	0.035625	0.030314	0.089376	0.074334	0.088856	0.046103
11	0.095252	0.056396	0.055257	0.083477	0.034830	0.097427	0.053850
12	0.126079	0.064161	0.092398	0.149523	0.110961	0.085337	0.092491
13	0.102783	0.042299	0.038028	0.125460	0.110703	0.046024	0.074920
14	0.084698	0.039006	0.017742	0.121127	0.086652	0.067529	0.064364
15	0.189199	0.076628	0.130944	0.191725	0.146525	0.073860	0.104717
16	0.227359	0.096029	0.142255	0.200174	0.162364	0.089438	0.125823
17	0.228817	0.104695	0.149780	0.185113	0.152235	0.079670	0.129736
18	0.101895	0.042387	0.034794	0.148078	0.104600	0.027351	0.074926
19	0.043483	0.037345	0.036034	0.059478	0.077343	0.197321	0.071405
20	0.272298	0.277168	0.111648	0.181605	0.135403	0.062598	0.116829
21	0.264347	0.262382	0.109279	0.178038	0.129676	0.060473	0.119810
22	0.151954	0.112966	0.051361	0.092272	0.117514	0.102460	0.102140
23	0.306077	0.171761	0.136602	0.206997	0.183219	0.070429	0.156080
24	0.310945	0.189072	0.145774	0.208759	0.184658	0.063005	0.157756
25	0.182945	0.108179	0.088957	0.075734	0.107927	0.099677	0.099734
26	0.192498	0.116542	0.088856	0.155687	0.164363	0.072684	0.141134
27	0.081774	0.071865	0.057385	0.169459	0.085744	0.032602	0.064885
28	0.136549	0.104695	0.073293	0.167535	0.109449	0.062092	0.082064
29	0.106060	0.037360	0.078021	0.097073	0.074847	0.077032	0.046987
30	0.083258	0.081856	0.043402	0.075308	0.084660	0.161469	0.096963
31	0.052394	0.033854	0.022860	0.089381	0.076556	0.088059	0.061419
32	0.348625	0.190392	0.162422	0.247545	0.230460	0.067947	0.167317
33	0.350331	0.205013	0.146050	0.183099	0.205354	0.057445	0.158886
34	0.176919	0.101627	0.095471	0.094724	0.108819	0.047908	0.098400
35	0.103900	0.043658	0.055118	0.152836	0.105360	0.076088	0.072446
36	0.217872	0.129744	0.094924	0.219090	0.200586	0.044797	0.161659
37	0.319311	0.293106	0.106876	0.187172	0.176954	0.044444	0.139494
38	0.075926	0.051978	0.020392	0.142063	0.098437	0.093764	0.103666
39	0.103584	0.094694	0.005728	0.120735	0.126960	0.079234	0.109213
40	0.157172	0.085903	0.028672	-0.033414	0.022904	-0.014143	0.005194
41	0.071490	0.093218	0.040676	0.059366	0.070294	0.190970	0.100189
42	0.251701	0.166855	0.038490	0.070953	0.128270	0.080261	0.106599
43	1.000000	0.280602	0.151087	0.143937	0.203276	0.050968	0.162125
44	0.280602	1.000000	0.083457	0.100495	0.106565	0.050782	0.091976
45	0.151087	0.083457	1.000000	0.148401	0.129698	0.075640	0.102163
46	0.143938	0.100495	0.148401	1.000000	0.255483	0.104945	0.193065
47	0.203276	0.106565	0.129698	0.255483	1.000000	0.037087	0.250042
48	0.050968	0.050770	0.075632	0.104945	0.037081	1.000000	0.080028
49	0.162125	0.091976	0.102163	0.193065	0.250042	0.080038	1.000000
50	0.084478	0.029590	0.071097	0.122220	0.109531	0.171635	0.107267

CORRELATION MATRIX ALL VARIABLES

	43	44	45	46	47	48	49
51	0.136624	0.088509	0.104175	0.202074	0.252367	0.092040	0.189906
52	0.249688	0.113027	0.132711	0.150440	0.241090	0.035396	0.177208
53	0.235552	0.121701	0.136731	0.193878	0.264189	0.073338	0.209624
54	0.153724	0.115043	0.058118	0.100446	0.130502	0.139219	0.109087
55	0.212592	0.138461	0.085824	0.076488	0.119869	0.151061	0.117450
56	0.243279	0.117832	0.156237	0.305644	0.319898	0.071445	0.262019
57	0.275069	0.139199	0.153843	0.216185	0.182171	0.067879	0.166289
58	0.224024	0.122317	0.139456	0.356237	0.216363	0.070880	0.143016
59	0.335384	0.160352	0.243204	0.420095	0.276606	0.088241	0.194460
60	0.353202	0.167898	0.275817	0.430678	0.293585	0.103865	0.208745
61	0.295384	0.147345	0.225315	0.416500	0.278933	0.081753	0.211596
62	0.320692	0.158013	0.192076	0.373465	0.253004	0.070364	0.175918

CORRELATION MATRIX ALL VARIABLES

	50	51	52	53	54	55	56
1	0.107146	0.116279	0.052512	0.124327	0.284961	0.202977	0.11732[illegible]
2	0.082955	0.112349	0.096142	0.132436	0.083562	0.080719	0.19960[illegible]
3	0.062244	0.082078	0.052691	0.070466	0.187563	0.188041	0.091655
4	0.046557	0.054746	0.042922	0.054360	0.045726	0.061909	0.086836
5	0.154648	0.121093	0.009713	0.067300	0.030024	0.018634	0.162813
6	0.080636	0.095246	0.053974	0.072537	0.052701	0.062179	0.147100
7	0.086319	0.106068	0.059244	0.078832	0.055038	0.071816	0.155751
8	0.063671	0.089749	0.062102	0.086697	0.065811	0.082048	0.132654
9	0.060954	0.095206	0.072454	0.099427	0.083080	0.084850	0.156026
10	0.074837	0.070662	0.022497	0.047087	0.092268	0.082620	0.096415
11	0.044204	0.065316	0.013529	0.040817	0.077193	0.067398	0.077655
12	0.068290	0.077112	0.045115	0.080734	0.081658	0.099136	0.146762
13	0.068839	0.097122	0.040627	0.055769	0.072689	0.062939	0.116460
14	0.053959	0.065993	0.053279	0.052116	0.072738	0.119745	0.114800
15	0.100610	0.105514	0.085830	0.104685	0.066599	0.073871	0.175310
16	0.084686	0.117581	0.114424	0.137845	0.066874	0.104092	0.193202
17	0.090360	0.104824	0.117767	0.131873	0.073838	0.101994	0.200408
18	0.067433	0.086021	0.042233	0.067913	0.079602	0.043526	0.134986
19	0.074091	0.105896	0.062480	0.061780	0.235819	0.188728	0.062194
20	0.023673	0.116752	0.134506	0.136596	0.117784	0.165913	0.196462
21	0.024876	0.112124	0.121537	0.123190	0.151368	0.154750	0.181513
22	-0.012463	0.122920	0.103622	0.090546	0.198196	0.151519	0.147233
23	0.045970	0.135852	0.166839	0.156108	0.114527	0.122673	0.215398
24	0.035724	0.140373	0.183710	0.166251	0.125763	0.131733	0.234000
25	0.042358	0.088898	0.091441	0.105421	0.162326	0.146171	0.116394
26	0.049197	0.126997	0.119996	0.124840	0.158316	0.150341	0.209020
27	0.037193	0.099164	0.032089	0.056759	0.047619	0.082968	0.136398
28	0.032665	0.109760	0.086466	0.078276	0.106290	0.110243	0.154317
29	0.020259	0.037207	0.043488	0.043074	0.085171	0.081583	0.074799
30	0.051802	0.095377	0.054752	0.059502	0.214909	0.161618	0.086822
31	0.039185	0.063650	0.039608	0.047704	0.097565	0.110418	0.087366
32	0.051702	0.161678	0.201538	0.203385	0.123342	0.137542	0.258813
33	0.024990	0.157187	0.201763	0.193663	0.136759	0.140867	0.232045
34	0.021148	0.082533	0.125378	0.138740	0.127014	0.107150	0.126494
35	0.042820	0.093914	0.064783	0.066676	0.099595	0.073935	0.117327
36	0.010927	0.162804	0.158600	0.179172	0.180284	0.126788	0.239556
37	0.012315	0.126569	0.188752	0.180749	0.186764	0.189468	0.232880
38	0.032173	0.096628	0.056610	0.073362	0.165796	0.103780	0.149589
39	0.025909	0.135777	0.069826	0.096696	0.247253	0.165454	0.137046
40	-0.044901	0.023394	0.031435	0.030412	0.029309	0.084751	0.023579
41	0.055934	0.066460	0.058358	0.080448	0.196133	0.134692	0.069612
42	0.024485	0.122281	0.090074	0.108785	0.199221	0.208085	0.165504
43	0.084478	0.136621	0.249688	0.235554	0.153724	0.212587	0.243279
44	0.029596	0.088509	0.113027	0.121706	0.115043	0.138461	0.117832
45	0.071097	0.104175	0.132711	0.136734	0.058118	0.085824	0.156237
46	0.122220	0.202074	0.150440	0.193880	0.100452	0.076488	0.305644
47	0.109531	0.252367	0.241090	0.264189	0.130502	0.119869	0.319898
48	0.171635	0.092040	0.035386	0.073338	0.139196	0.151042	0.071439
49	0.107267	0.189906	0.177208	0.209628	0.109087	0.117450	0.262019
50	1.000000	0.141987	0.062195	0.094124	-0.017807	0.023545	0.098961

CORRELATION MATRIX ALL VARIABLES

	50	51	52	53	54	55	56
51	0.141991	1.000000	0.206500	0.213384	0.173043	0.151100	0.271038
52	0.062200	0.206500	1.000000	0.285564	0.125839	0.149904	0.244378
53	0.094120	0.213381	0.285560	1.000000	0.139549	0.142924	0.242241
54	-0.017807	0.173031	0.125839	0.139549	1.000000	0.297376	0.156515
55	0.023545	0.151100	0.149904	0.142932	0.297376	1.000000	0.209321
56	0.098964	0.271038	0.244378	0.242241	0.156515	0.209321	1.000000
57	0.056758	0.117507	0.164596	0.167454	0.124220	0.136159	0.211717
58	0.143153	0.163668	0.118421	0.191213	0.062771	0.056408	0.250658
59	0.209439	0.194106	0.206664	0.256143	0.068885	0.084545	0.314854
60	0.226735	0.196634	0.206453	0.262036	0.050097	0.074191	0.325668
61	0.200323	0.191251	0.186643	0.254912	0.073818	0.064430	0.317485
62	0.176163	0.183703	0.191919	0.225686	0.082654	0.090240	0.280946

CORRELATION MATRIX ALL VARIABLES

	57	58	59	60	61	62
1	0.159560	0.067422	-0.031722	0.024873	0.122555	-0.017915
2	0.183451	0.275119	0.313344	0.330073	0.328484	0.286364
3	0.077671	0.087514	0.092800	0.089261	0.089641	0.088217
4	0.133392	0.146422	0.167675	0.193619	0.154315	0.114439
5	0.081735	0.355420	0.448531	0.434691	0.369287	0.373691
6	0.131432	0.197844	0.269377	0.265461	0.222457	0.208378
7	0.161145	0.222498	0.310113	0.308450	0.258186	0.241631
8	0.143102	0.178109	0.260648	0.250299	0.216977	0.193134
9	0.177744	0.231951	0.291457	0.288556	0.248478	0.235137
10	0.047124	0.062051	0.126355	0.105610	0.110845	0.108087
11	0.095890	0.088399	0.120258	0.116548	0.101843	0.096058
12	0.133487	0.217412	0.235313	0.228264	0.201066	0.189758
13	0.066193	0.196559	0.221370	0.204107	0.190276	0.209637
14	0.085553	0.175232	0.164768	0.159846	0.166770	0.159371
15	0.216321	0.253098	0.346821	0.360446	0.291592	0.296209
16	0.220438	0.257580	0.364791	0.380847	0.295668	0.296479
17	0.224934	0.257198	0.360631	0.370261	0.296265	0.290028
18	0.078474	0.194261	0.221548	0.202230	0.181597	0.203988
19	0.032345	0.036704	0.048717	0.041697	0.041835	0.041006
20	0.189862	0.186629	0.250100	0.250550	0.224608	0.242977
21	0.185527	0.189750	0.244417	0.246765	0.214415	0.234543
22	0.145819	0.056616	0.086826	0.087590	0.078160	0.067607
23	0.325967	0.243718	0.356717	0.356406	0.290144	0.294362
24	0.332938	0.236809	0.345750	0.342832	0.285939	0.293344
25	0.132873	0.080037	0.127655	0.134369	0.121981	0.113700
26	0.187118	0.153572	0.225677	0.218333	0.212563	0.166040
27	0.109549	0.226845	0.245080	0.198209	0.207510	0.202228
28	0.165594	0.227748	0.265579	0.218129	0.223153	0.211094
29	0.129813	0.168047	0.163960	0.175440	0.129289	0.127131
30	0.064073	0.037950	0.073393	0.060298	0.070810	0.081837
31	0.072505	0.059653	0.085475	0.072649	0.078329	0.079490
32	0.413528	0.273919	0.390710	0.391397	0.337280	0.341220
33	0.391435	0.203883	0.314071	0.322002	0.267609	0.274562
34	0.179489	0.081718	0.148282	0.181235	0.164390	0.099606
35	0.187002	0.153606	0.193489	0.193109	0.173989	0.186719
36	0.244873	0.209522	0.238217	0.228991	0.254891	0.221229
37	0.229123	0.191722	0.244455	0.236599	0.245138	0.247502
38	0.100149	0.142146	0.130203	0.119575	0.154692	0.126602
39	0.100324	0.110844	0.121807	0.089801	0.142842	0.127767
40	0.084571	-0.002171	0.004917	0.008439	-0.022039	0.001703
41	0.091478	0.057770	0.035073	0.054923	0.087546	0.045737
42	0.127419	0.095366	0.095135	0.089328	0.101740	0.099071
43	0.275070	0.224024	0.335384	0.353202	0.295384	0.320692
44	0.139203	0.122317	0.160352	0.167898	0.147345	0.158013
45	0.153843	0.139456	0.243204	0.275817	0.225315	0.192076
46	0.216185	0.356237	0.420095	0.430678	0.416500	0.373465
47	0.182171	0.216363	0.276606	0.293585	0.278933	0.253004
48	0.067879	0.070878	0.088241	0.103864	0.081753	0.070364
49	0.166289	0.143016	0.194460	0.208745	0.211596	0.175918
50	0.056758	0.143153	0.209439	0.226734	0.200323	0.176164

CORRELATION MATRIX ALL VARIABLES

	57	58	59	60	61	62
51	0.117507	0.163667	0.194106	0.196634	0.191252	0.183704
52	0.164599	0.118421	0.206664	0.206452	0.186644	0.191920
53	0.167454	0.191213	0.256143	0.262035	0.254912	0.225686
54	0.124220	0.062768	0.068885	0.050097	0.073818	0.082654
55	0.136165	0.056408	0.084545	0.074191	0.064430	0.090241
56	0.211717	0.250667	0.314854	0.325658	0.317485	0.280947
57	1.000000	0.247238	0.329089	0.351041	0.326756	0.271133
58	0.247239	1.000000	0.593961	0.604917	0.597976	0.611883
59	0.329089	0.593961	1.000000	0.841399	0.738046	0.711785
60	0.351041	0.604917	0.841399	1.000000	0.774725	0.688451
61	0.326756	0.597976	0.738046	0.774725	1.000000	0.671101
62	0.271133	0.611883	0.711784	0.688451	0.671101	1.000000

APPENDIX C

Varimax Factors for the Ninth Grade Student Questionnaire

EMP-FACTOR ANALYSIS 9TH GRADE

VARIMAX FACTORS

	1	2	3	4	5	6	7
3	0.078802	0.052675	0.435768	-0.028354	-0.103636	0.CC8358	0.016612
4	-0.000210	0.532731	0.185978	-0.011958	0.077396	-0.080011	-0.136669
7	0.055584	0.530164	0.080709	-0.130878	-0.106611	-0.141350	-0.247141
10	0.065580	0.065424	0.137311	-0.068074	0.031745	-0.000084	-0.051672
12	0.023952	0.220697	0.038075	-0.037797	-0.279103	-0.089230	0.262882
13	0.054387	0.112646	0.069683	-0.059455	-0.838982	-0.033887	0.011646
14	0.021645	0.004107	0.086249	-0.064049	-0.601143	-0.082101	0.004986
15	0.096806	0.569593	-0.015990	-0.107841	-0.250046	-0.142831	0.107444
16	0.072256	0.660529	-0.011881	-0.106619	-0.104154	-0.234717	0.237668
17	0.046510	0.635903	-0.025395	-0.120791	-0.037743	-0.231524	0.232023
18	0.092547	0.209268	0.063307	-0.067296	-0.723615	-0.018544	-0.002964
19	-0.016617	-0.021135	0.568795	-0.024635	-0.203069	0.055600	0.040288
20	0.832982	0.105026	-0.004356	-0.069974	-0.056758	-0.161109	0.016765
21	0.807706	0.151293	0.047597	-0.035629	-0.135150	-0.136010	0.024957
22	0.200377	0.173841	0.246496	-0.024754	-0.007996	-0.139914	0.124577
23	0.157749	0.212318	0.044292	-0.075771	-0.118645	-0.811768	0.056971
24	0.168276	0.155517	0.043394	-0.100203	-0.074288	-0.824660	0.061779
25	0.065247	0.102500	0.226988	-0.039707	-0.088015	-0.122252	0.410371
26	0.114451	0.220176	0.080085	-0.151591	-0.023430	-0.121155	0.297434
28	0.055563	0.288550	0.036600	-0.092280	-0.135238	-0.090872	0.231821
31	-0.043712	-0.132478	0.247282	-0.032022	-0.199361	-0.114034	0.020178
32	0.141212	0.133751	0.016153	-0.192235	-0.052063	-0.801071	0.062182
33	0.152731	0.138960	0.037873	-0.176409	-0.014135	-0.742763	0.144671
34	0.057184	-0.062602	0.017702	-0.118305	0.030887	-0.141278	0.377153
35	0.067184	0.158087	0.023887	-0.045069	-0.092430	-0.010459	0.037140
36	0.125342	-0.057979	0.031402	-0.285002	-0.047448	-0.323027	-0.005036
37	0.641127	-0.039805	0.071517	-0.196658	-0.054587	-0.245662	0.019399
38	0.018792	0.080161	0.156354	-0.061786	-0.070106	-0.025536	-0.045554
39	0.066503	-0.060586	0.343251	-0.124212	-0.205327	-0.127104	-0.104497
40	0.059255	0.048338	-0.073175	0.014570	0.040700	-0.106906	0.646489
41	0.019117	0.056433	0.568379	-0.032374	0.011936	-0.084027	-0.216637
42	0.158087	0.083156	0.313358	-0.193257	-0.056383	-0.081540	0.247633
43	0.317017	0.094220	0.121206	-0.348391	-0.039319	-0.285826	0.296961
44	0.496706	0.007536	0.165275	-0.143308	0.029723	-0.114199	0.124754
45	0.108129	0.103741	-0.004513	-0.249755	0.047876	-0.099885	0.108719
46	0.105265	0.189903	-0.061099	-0.409757	-0.104455	-0.120156	-0.195951
47	0.024018	0.084868	0.004573	-0.615624	-0.082508	-0.097817	-0.007403
48	0.016492	0.062442	0.449819	0.021257	0.056156	-0.046929	-0.016084
49	0.028536	0.053041	0.074325	-0.488028	-0.023186	-0.082346	-0.025316
50	-0.014777	0.036367	0.046472	-0.202797	-0.065451	0.003242	-0.058590
51	0.015006	0.062166	0.129006	-0.531645	-0.048796	-0.028373	-0.007737
52	0.091006	-0.026842	0.065125	-0.555236	0.003141	-0.126377	0.108600
53	0.078739	0.000569	0.075483	-0.573576	-0.004779	-0.096075	0.087538
54	0.081026	0.015765	0.560011	-0.195226	0.002545	-0.040139	0.114513
55	0.147738	0.051691	0.510466	-0.241011	0.003794	-0.027233	0.237537
56	0.102354	0.155219	0.037598	-0.595856	-0.068315	-0.100779	0.004166
57	0.074135	0.143690	0.069952	-0.230221	0.013585	-0.458678	0.066544

VARIMAX FACTORS

	8	9	10
3	-0.057518	-0.246353	-0.067791
4	-0.084429	0.314919	-0.050030
7	-0.099103	0.010810	0.117238
10	0.030319	-0.762428	-0.057458
12	-0.131927	-0.190063	-0.136046
13	-0.014003	0.026452	-0.028871
14	-0.128231	0.004422	0.040634
15	-0.027186	0.015749	-0.116242
16	-0.041998	-0.109462	-0.106305
17	-0.050467	-0.196960	-0.070642
18	-0.006390	-0.038849	0.003842
19	-0.044515	0.036876	-0.225131
20	-0.113191	-0.084418	-0.053922
21	-0.134180	-0.078089	-0.057563
22	-0.342484	-0.113470	0.162835
23	-0.012478	-0.055504	-0.028359
24	-0.029935	-0.065365	-0.012243
25	-0.145105	-0.116473	-0.108850
26	-0.327473	-0.246809	0.039049
28	-0.190539	-0.190835	0.020837
31	-0.131999	-0.189928	-0.121511
32	-0.128175	-0.016019	-0.025451
33	-0.100846	0.022435	0.025868
34	-0.480354	0.131737	-0.105118
35	-0.487249	0.122143	-0.171967
36	-0.469250	-0.078827	0.139849
37	-0.229693	-0.059619	0.069514
38	-0.618009	-0.055215	0.048178
39	-0.342157	-0.224364	0.246068
40	0.029276	0.088584	0.087179
41	-0.045171	0.021422	-0.089640
42	-0.063391	0.030826	0.289560
43	0.064589	0.091702	0.017492
44	0.075116	0.073715	0.005157
45	-0.017054	0.086942	-0.356261
46	-0.270421	-0.110394	-0.214796
47	-0.082884	-0.070167	-0.007960
48	-0.091294	0.001741	-0.496866
49	-0.090025	-0.042918	-0.091068
50	0.036587	-0.117022	-0.562484
51	-0.053675	-0.076226	-0.028922
52	0.039371	0.108678	-0.012892
53	-0.004722	0.060861	-0.085762
54	-0.150127	-0.024625	0.193800
55	0.045282	-0.011211	0.116210
56	-0.135632	-0.116654	0.013457
57	-0.155263	0.066639	-0.089772

APPENDIX D

Intercorrelations of Indices and Selected Variables From the Ninth Grade Student Questionnaire*

*The records of those students who did not give a response for their age and/or sex have been eliminated from all these computations and consequently the number is about 130,000.

1*	I	Expectations
2	II	Socio-Economic Status
3	III	Social Confidence
4	IV	Attitude Toward Life
5	V	Family Structure and Stability
6	VI	Educational Desires and Plans
7	VII	Study Habits
8	VIII	Achievement Composite
9	1**	Sex
10	2	Age
11	5	Racial Ethnic Differences
12	6	Number of Persons in the Home
13	8	Number of Older Siblings
14	9	Number of Siblings Dropped Out High School
15	10	Foreign Language Spoken by Parents
16	11	Foreign Language Spoken by Student
17	25	PTA Attendence
18	29	Attended Kindergarten
19	30	Infrequent Change in Schools
20	39	Few Voluntary Absences

*These numbers represent the order of the variables as they appear on the following sheets.

**These numbers indicate the variables as they appear in the list of variables.

CORRELATION MATRIX TOTAL SAMPLE

	1	2	3	4	5	6	7
1	1.000000	0.396472	0.454539	0.473846	0.366065	0.545080	0.536663
2	0.396472	1.000000	0.311208	0.383877	0.467701	0.534729	0.449631
3	0.454539	0.311208	1.000000	0.846105	0.333803	0.364499	0.518119
4	0.473846	0.383877	0.846105	1.000000	0.333425	0.452748	0.500150
5	0.366065	0.467701	0.333803	0.333425	1.000000	0.327267	0.483460
6	0.545080	0.534729	0.364499	0.452748	0.327267	1.000000	0.502798
7	0.536663	0.449631	0.518119	0.500150	0.483460	0.502798	1.000000
8	0.391799	0.537212	0.302432	0.470831	0.329621	0.510009	0.356106
9	0.204091	0.256103	0.240546	0.214585	0.345452	0.156247	0.356952
10	0.276107	0.336782	0.208920	0.261306	0.285248	0.332536	0.292824
11	0.171730	0.412216	0.246651	0.302581	0.350560	0.164332	0.241682
12	0.209035	0.419341	0.180292	0.214005	0.244387	0.245336	0.259909
13	0.230700	0.462922	0.181866	0.213083	0.311628	0.270954	0.280591
14	0.247148	0.442827	0.167223	0.212553	0.287844	0.319665	0.271113
15	0.223638	0.261281	0.202516	0.204405	0.331948	0.169888	0.311819
16	0.223935	0.289997	0.213170	0.206295	0.313278	0.210522	0.321869
17	0.308343	0.332037	0.273418	0.260226	0.368968	0.307032	0.436969
18	0.250822	0.400965	0.276731	0.259915	0.326170	0.301939	0.413802
19	0.321348	0.290235	0.373976	0.323364	0.447229	0.273307	0.533266
20	0.162901	0.146629	0.135047	0.119998	0.048586	0.210555	0.162261

	8	9	10	11	12	13	14
1	0.391799	0.204091	0.276107	0.171730	0.209035	0.230700	0.247148
2	0.537212	0.256103	0.336782	0.412216	0.419341	0.462922	0.442827
3	0.302432	0.240546	0.208920	0.246651	0.180292	0.181866	0.167223
4	0.470831	0.214585	0.261306	0.302581	0.214005	0.213083	0.212553
5	0.329621	0.345452	0.285248	0.350560	0.244387	0.311628	0.287844
6	0.510009	0.156247	0.332536	0.164332	0.245336	0.270954	0.319665
7	0.356106	0.356952	0.292824	0.241682	0.259909	0.280591	0.271113
8	1.000000	0.129762	0.371194	0.470359	0.280579	0.281055	0.319090
9	0.129762	1.000000	0.232447	0.147480	0.222723	0.230025	0.171673
10	0.371194	0.232447	1.000000	0.202034	0.201703	0.206001	0.258479
11	0.470359	0.147480	0.202034	1.000000	0.309264	0.249138	0.215403
12	0.280579	0.222723	0.201703	0.309264	1.000000	0.336400	0.250105
13	0.281055	0.230025	0.206001	0.249138	0.336400	1.000000	0.632734
14	0.319090	0.171673	0.258479	0.215403	0.250105	0.632734	1.000000
15	0.183694	0.346258	0.186965	0.193763	0.205433	0.220097	0.187062
16	0.183254	0.328684	0.188259	0.169138	0.202045	0.212903	0.182803
17	0.181916	0.232326	0.173658	0.101578	0.141369	0.188210	0.185681
18	0.236009	0.280338	0.207373	0.160953	0.202161	0.241242	0.229143
19	0.183430	0.351510	0.216226	0.168664	0.203683	0.197215	0.177024
20	0.017235	0.021999	0.036181	-0.043675	0.020847	0.023144	0.046870

EDUCATIONAL MODELS PROJECT
INTH GRADE

CORRELATION MATRIX TOTAL SAMPLE

	15	16	17	18	19	20
1	0.223058	0.223935	0.308343	0.250822	0.321248	0.162901
2	0.261281	0.289997	0.332037	0.400965	0.290235	0.146629
3	0.202516	0.213170	0.273418	0.276731	0.373976	0.135047
4	0.204405	0.206295	0.260226	0.259915	0.323364	0.119998
5	0.331948	0.313278	0.343968	0.326170	0.447229	0.048586
6	0.169888	0.210522	0.307032	0.301939	0.279307	0.210555
7	0.311819	0.321889	0.436969	0.413802	0.533266	0.162261
8	0.183694	0.183254	0.181916	0.236009	0.183430	0.017235
9	0.348258	0.328684	0.232326	0.280338	0.351510	0.021999
10	0.186965	0.168259	0.173658	0.207373	0.216226	0.036182
11	0.193763	0.169136	0.101578	0.160953	0.168664	-0.043675
12	0.205433	0.202045	0.141369	0.202161	0.203683	0.020847
13	0.220097	0.212903	0.188210	0.241242	0.197215	0.023144
14	0.187062	0.182803	0.185681	0.229143	0.177024	0.046870
15	1.000000	0.347816	0.210916	0.197181	0.301046	0.000226
16	0.347816	1.000000	0.215666	0.260833	0.297326	0.068943
17	0.210916	0.215666	1.000000	0.272451	0.346797	0.141033
18	0.197181	0.260833	0.272451	1.000000	0.420111	0.109814
19	0.301046	0.297326	0.346797	0.420111	1.000000	0.079923
20	0.000226	0.068943	0.141033	0.109814	0.079923	1.000000